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PROGRESS OF SAVANNAH LINE.

When the Ocean Steamship Co. (Savannah line) was formerly organized in 1874, the following vessels were employed at different periods upon the line: Oriental, Sommerset, Carroll, Worcester, Merrimac, Seminole, Alhambra, United States and Kensington. In 1878 this company further increased its fleet by the purchase of the splendid model steel steamships, Gate City and City of Columbus. Later on, as business increased, it was found necessary to dispose of these, which were long and favorably known by the traveling public, replacing them with larger and more modern appointed vessels. This has been done and today the fleet of the New York-Savannah line is composed of the following modern steel steamships: City of Savannah, City of Atlanta, City of Columbus, City of Macon and City of Memphis, each of which has a carrying capacity of 12,000 bales of cotton.

The Boston-Savannah line is composed of the Kansas City, City of Augusta, Chattahoochee, Nacoochee, and City of Birmingham, all of which are well known to the traveling public. Possibly no greater progress has been made in transportation facilities—no more striking contrasts can be shown—than from the side-wheel, wooden steamships of those early times, to the staunch, speedy steel creations of the present Savannah line fleet which now course up and down the coast between New York and Savannah and Boston and Savannah.

The Savannah line having for its aim and purpose a fixed desire to provide perfect transportation facilities between the north and the south, and realizing the service offered by the present fleet was still inadequate to handle properly the increasing freight

and passenger traffic, has built a new vessel exceeding all others in carrying capacity. This latest addition to the fleet is the City of Savannah, which was placed in the New York-Savannah line service on Tuesday, Oct. 8, on which day she made her maiden voyage to Savannah. The dimensions are: Length, 403 ft. 3½ inches; breadth, 49 ft.; depth to hurricane deck, 35 ft.; depth to main deck, 24 ft. 4 in.; freight cargo capacity, 5,900 tons.

There are fifty-eight first cabin staterooms accommodating 116 passengers, twelve intermediate staterooms, thirty-six passengers, and steerage accommodations for sixty passengers.

STEAMER TAMASO DI SAVOJA.

Cable advices were received today from Genoa to Cesare Conti, agent of the Lloyd Sabaudo, reporting the successful launching of their new twin screw steamship Tamaso di Savoja at the well known ship yards of Barclay, Curle & Co., Glasgow, Scotland. This ship was built to meet the demand of increased traffic and commerce between the United States and Italy, and it is the fourth new steamer of this company to enter the service which was inaugurated between New York and Italian ports within the past year. Progress of this line has been so rapid that it was decided to make the Tamaso di Savoja the finest of the fleet. She is 480 ft. long, 55 ft. beam, and 28 ft. draught. She can carry 160 first cabin passengers, consisting of four Cabina de Luxe, twelve single berth cabins, twelve two-berth cabins, and the remainder for three persons in a room.

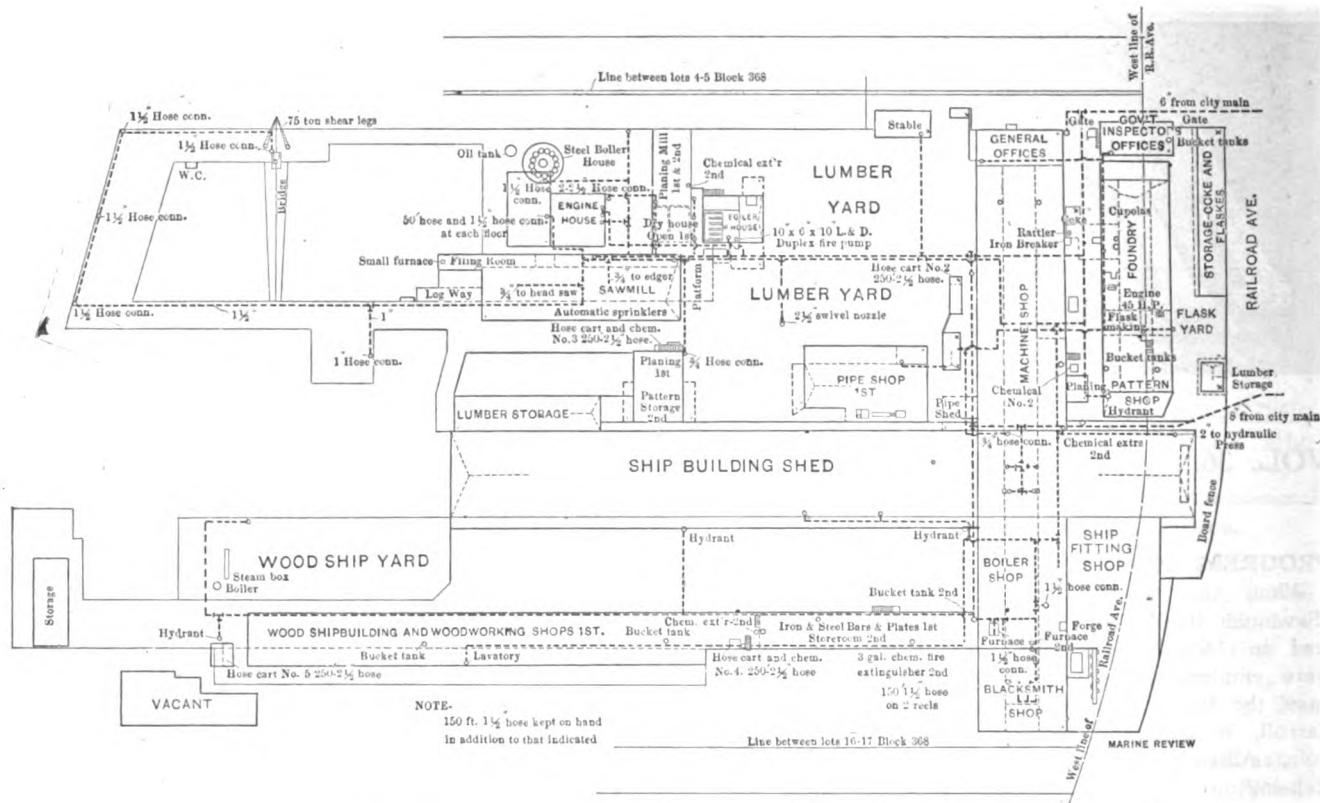
She will be fitted with excellently equipped baths, toilets, etc. A spacious and artistically decorated dining

saloon, a winter garden, a ladies' parlor, a smoking room with cafe adjoining will be featured and add to the comforts of the passengers. A select orchestra will be placed on this ship, in addition to which a novel feature will be introduced in the shape of an Italian male quartet which will help to entertain the passengers. This novelty does not exist on any other ship coming into the United States.

The intermediate class will accommodate 200 passengers with spacious cabins for six people in each. This class will have a separate dining room, baths, toilets, etc. The accommodation for steerage passengers will be 1,400. The engines of this new steamer are of the quadruple expansion order, having 8,500 H. P. and they are expected to develop a speed of 18 knots, making her one of the fastest express steamers plying between this port and Italy. She will have Marconi wireless telegraph on board like all other modern vessels. It is expected that she will get a fair share of the business on account of her beauty and comfortable accommodations.

COMPLETION OF THE MAURETANIA.

The Mauretania, the sister ship to the Cunard new express turbine steamer Lusitania, has just been taken out to sea to commence her speed trials, which will occupy at least a month's time. Although the Mauretania is correctly described as a sister ship to the Lusitania she is, in fact, bigger than the Greyhound that has just completed a successful maiden trip across the Atlantic. The length is the same, 790 ft., and the breadth is the same, 88 ft. But the Mauretania is just six inches deeper than her sister ship from main deck to keel, viz., 60 ft. 6 in., as against



60 ft., and thus it is that her gross tonnage is given as being 700 tons greater than that of the Lusitania. Then, too, the Tyne boat has more boiler power, which on the face of things would seem to be necessary if the Mauretania (a heavier boat) is to be placed on even terms with her sister ship in the matter of speed, and also accord with the stipulations of the admiralty. But in all probability it will be found that the extra boiler power will more than compensate for the extra dead weight, in which case the world will be astonished by the advent of a boat capable of even greater things than the Lusitania. The reason it is hoped to show a better trial with the Mauretania than the Lusitania lies in the model of the boat; that is, upon the amount of resistance that she sets up in her course through the water. In other essentials the two boats are identical in design. Such differences as existed relate only to minor matters as to which the respective firms have been guided by their own experience and knowledge.

Captain Pritchard of the Caronia has been appointed commander of the Mauretania. It is interesting to add in this connection that about thirty years ago Captain Pritchard visited Wallsend for the purpose of taking away a little craft measuring only 100 ft. in length, and having a

net tonnage of just 41 tons, the smallest boat in its way that Messrs. Swan, Hunter & Wigham Richardson ever constructed. It is significant of the advance that has been made that Captain Pritchard, who has in the meantime become one of the most trusted and experienced commanders of the Cunard company, should now be at Wallsend to take charge not only of the biggest ship that has ever been built on the Tyne, but the biggest ship in the world.

WILL BE NAMED NORTH DAKOTA.

The Fore River Ship Building Co. was last week informed officially that the 20,000-ton battleship it is to build for the United States has been named North Dakota. The law under which the secretary of the navy selects names for ships of the first class was enacted in the navy appropriation bill approved May 4, 1898, and is as follows:

That hereafter all first class battleships and monitors owned by the United States shall be named for the states and shall not be named for any city, place, or person until the names of the states shall have been exhausted; provided that nothing herein contained shall be so construed as to interfere with the names of states al-

ready assigned to any such battleship or monitor.

This enactment superseded section 1531 of the revised statutes enacted in 1858. At the present time the United States has twenty-nine battleships either in commission or under construction of which twenty-eight are named for states and one is named Kearsarge. This latter name was given by special provision of the navy appropriation bill approved March 2, 1895.

There are ten armored cruisers in the United States navy which are named for states, four monitors named for states and the Texas, which is a battleship of the second class. The name New York, which is borne by a cruiser, means the city of New York and not the state, but until this cruiser is named in some other way the state of New York cannot be otherwise represented in the navy without a duplication.

So the only state in the union that is not represented in the navy is Utah, although Oklahoma will soon be added. Any increase in the navy, therefore, will use up these two available names of states and the secretary of the navy unless the law is changed will have to begin naming ships of the first class after cities, places or persons, or else transfer some of the names of states now held by monitors and cruisers to ships of the first class.

There are four monitors named for states, i. e., Arkansas, Florida, Nevada and Wyoming. The secretary of the navy has authority to give these monitors or some of the cruisers other names and release the names of these states for use on vessels of the first class. This changing of names was done in the case of old Michigan, the single American warship on the great lakes, which had its name changed to Wolverine, thus releasing the name of Michigan which was given to a battleship. A change was also made in the case of the old New Hampshire which had its name changed to Granite State, leaving the name New Hampshire to be given to the present battleship. There is a precedent also for changing the name of monitors. There used to be a monitor named Connecticut but it was given another name and the present Connecticut is a battleship and is used by Rear Admiral Evans for his flagship.

WANTS AMERICAN STEAMERS AIDED.

The following is from an interview with Senator Stone of Missouri, former governor, who passed through Honolulu on the Hongkong Maru, in trans-Pacific trade:

"To secure the American market for Americans I want:

"First—A tariff commission to revise the present tariff, with the view to protect American industry and leave door open for more general exchange of commodities by equitable reciprocity treaties.

"Second—A subsidized merchant marine for export to South America, Australia, Japan and China. England, Germany and France subsidize their steamship lines, and America pays to these nations several hundred millions of dollars for freight and carrying of mails every year and, aside from this, America has to ship to the above countries by way of Europe. I am aware that the leaders of labor unions are opposed to subsidizing, but I do not understand why, as certainly 50 per cent of the price of every article manufactured in this country is paid for labor, 35 per cent for raw material and 15 per cent for profit. The latter is uncertain, and may be less, because of the uncertainty of labor conditions.

"Third—America should have a free port of entry, and this should be at the east end of Long Island, where raw material would enter free of duty, to be manufactured for export. This

was the idea of the late Austin Corbin, and it should be brought about in connection with the contemplated Pennsylvania railroad and ocean terminal."

RIVER IMPROVEMENTS.

BY PERCY FASSIG.

We are living in a period when one of the chief necessities is cheap transportation. It is the almost prohibitive freight rates that make not only living expenses but the cost of building so very high. So much has been said in favor of water transportation; figures have been produced to show that it is the only cheap method; but excepting the great lakes, where is our inland water transportation? What does it consist of? A few months each year on our principal rivers. Some few rivers have been improved and provide slack-water navigation; but these are generally small and of little consequence.

Congress has appropriated large sums for river improvements, and they have been applied to the purpose—the reports show that. But where are the results? What have we to show for the millions spent?

One thing is certain, congress must change its methods with reference to these improvements. We must not overlook the more conservative attitude of congress in late years toward these improvements. This great work (time will show that it is a great work) must, however, be taken up in a strictly business manner. The work to be undertaken must be considered from every point of view—not as to whether a section should be improved to accommodate some congressman's or senator's constituents, but whether it will be of special interest to the country at large. In this work it is not what a community wants, but what will benefit the greatest number of persons. These narrow views in so large an undertaking must give way to broader lines. Improving rivers is a business proposition and it should be put on that basis without further ado. Enough money has been wasted in this work to have improved, in a systematic way, miles of valuable rivers.

That inland waterways are of great advantage to a country is shown by what foreign countries have and are doing. Such improvements are expensive however, and great care must be used in carrying them to completion. The work is unusual, the risk is great, and it can only be successfully accomplished with due regard to profit and loss. Dumping money into costly ex-

periments is bad judgment, and that is practically the present status of these improvements in this country.

For over thirty years river improvements have been well under way and there is practically as much money wasted today in experimenting as in the early days. The information obtained during years of construction is not readily available and therefore is not used as it should be. There is no doubt that much valuable information has been collected, and it should be arranged and published for the ready reference of all government engineers, and it should also be made a part of a postgraduate course for the coming engineer.

River improvement has been made a government work; and it is only reasonable that the government should collect, edit and publish the information that years of designing and actual construction must have developed, and which is contained among the dust-covered records filed away in Washington. That information would be invaluable not only to the men conducting the work but as a money saving device, for today hours of valuable time are spent in designing that which is practically a duplication of designs that had been used elsewhere. No one will find fault with a man in his attempt to better existing designs; but for a man to attempt the improvement of a work that is only known to him from the plans, that he has never seen in operation, is next to rank folly. And let it be added that much of this is constantly being done in one section or the other. In the desire to be original these engineers waste millions of dollars.

The needs of water transportation were never more apparent than today. Our future development depends upon our transportation facilities; we must have the best, the most rapid, and also the cheapest methods for transporting our products and the raw materials. But we do not want to wait another thirty years for this cheap transportation, nor do we believe in the expenditure of these large sums without actual results.

Capt. Lars E. Larson, one of the oldest and best known lake captains, died at Manitowoc on Monday of this week. Capt. Larson began his sailing life when thirteen years of age on ocean plying vessels, and was in command of some of the first sailing vessels on the lakes, among them being the Mocking Bird, the Felicitus and the Minnie Slauson. He was seventy-two years old.

CAPT. JOSEPH ROULEAU

AN AUTOBIOGRAPHY

I was born in Sault Ste. Marie in 1849 and began sailing at the age of fourteen on Lake Superior with an uncle (Captain Stiles) on the schooner Chippewa, a vessel about 50 tons burden, which was owned in the Sault and was one of the very few that plied the waters of Lake Superior in those days. I continued sailing on the Chippewa until larger craft came out.

I next shipped on schooner Lorenzo B. Sheppard of Cleveland, commanded by Capt. Baker, a craft of about 300 tons, and afterwards on schooner George W. Holt of Buffalo, of about 500 tons and commanded by Capt. Charles Gibbs. These were considered very large and were engaged in the iron ore trade between Marquette and Lake Erie ports. I afterwards went to steamboating as I thought that sail vessels were too slow.

I will here mention some of the prominent captains I have sailed with—Capt. Geo. P. McKay of Cleveland on steamer Pewabic, Capt. Thomas Wilson of Cleveland on steamer Mineral Rock. Capt. Wilson has since passed away. When vessels became numerous on the lakes, I went to tugging on the river, continuing in that capacity until I became a master and pilot, and have continued that occupation with success to the present day.

In June 1867, I was in the shipwreck of the tug J. C. Morse on an excursion given out of Marquette, where the boat was owned and managed. Being a new boat, and on her first trip, she had booked forty-five passengers. Among them were the Hon. Peter White, of Marquette, Samuel P. Ely and family, the Mathers and Maynards and J. C. Morse, the person in whose honor the tug was named and others of prominence.

Although but eighteen years of age at the time of the accident, to me was given the credit for rescuing the passengers as well as myself from drowning in Lake Superior and also saving the steamer. All were saved except Mr. Maynard, who was drowned, and in acknowledgement of my worthy action, the people of Marquette presented me with a watch and chain, which I carry to this day with the inscription.

Presented to Joseph Rouleau
for gallant conduct

Tug J. C. Morse, July 17, 1867.

To give full details of my act of rescue and how the accident occurred would take too long. I have only this to say in conclusion, that I am pleased to realize that I saved those people from their awful fate. The accident referred to, was the tug striking a hidden rock about eight miles from Marquette above Presquile, in the vicinity of Middle Island. We were running at the rate of 12 miles an hour at the time, you can therefore imagine the consequences.

After the tugging days were over I again returned to the lakes, sailing with Capt. Albert Steward and Albert Sheppard, and other captains on different steamers. As steam barges commenced to make their appearance on the lakes, there was a call for pilots on St. Mary's river and I was advised to respond to the call, which I did and with my usual good luck as pilot, did well. I say good luck, for such I considered it, as it was very difficult in my early days of piloting to navigate the old channel of St. Mary's river, as buoys and target ranges were unknown and any master who had occasion to navigate the old channel of the river will certify to the above.

After a few years of successful piloting, I was called upon by the government to establish ranges in the old channel for the safety of navigating the same, which I did, and was later called again to construct lights on these ranges for the purpose of navigation at night for those who so desired. After my work was done in placing the ranges and lights in position, they had to undergo a thorough course of inspection which was afterwards approved by Col. Wm. Ludlow, Gen. O. M. Poe and the Light House Board from Washington, D. C., to the entire satisfaction of the government and the marine interests. I was on the tour of inspection with the above named gentlemen and can assure you that I was more than pleased when they said to me that my work was nobly done.

In doing this work I was under the immediate command of Col. Wm. Ludlow, the United States Light House inspector of this district, who gave



CAPT. JOSEPH ROULEAU.

me full authority to place the ranges and light just as I was accustomed to running the river, which I did, and which proved a success.

When the Canadian canal and channel were opened to navigation, I was called upon to open the way with heavy draught steamers. The first steamers of heavy draught to go through were the steamers Nyanza, of which I was the pilot, with the steamer City of London following close behind. To Capt. Wilson of the Nyanza and Capt. James Morgan of the London, belong the distinction of taking the first freight steamer through the Canadian channel and canal with me as their pilot.

When the Hay Lake channel was practically declared open to navigation, I was again called upon to open up that waterway by piloting steamers through. Outside of the steamer North West, the first steamer to use the new channel, was the steam barge J. H. Wade under command of Chas. Swartwood, with me as pilot. I continued piloting the new channel until the close of navigation.

I will here mention the number of steamers and consorts I piloted through the new channel from the date of its opening to the close of navigation that season. The number was 336 of which I have the list of names.

It is surprising to me that I had such wonderful success, meeting with no accidents whatever, taking all kinds of risks, running the channel after dark with the steamer North West and other steamers before

lights were established in the channel. I will never forget the remark that Capt. Brown of the steamer North West made the first time I took him through the new channel after dark and without any lights in the channel. When we got into Mud Lake, out of danger, he turned to me and said, "Joe, you've got an awful gall." I replied, "I think so too and I will not try it again for a thousand dollars." "Well," he said, "neither will I. This is the last time I take any chances;" but strange to say we did the very same thing the next trip, but it was the last.

In speaking of the Hay Lake channel there is a vast difference in the way the channel is marked today to what it was the first time I was called upon to set the first buoys. I wish to say that in all my sailing and in all my career as pilot I have not cost the insurance companies nor the marine interests one solitary dollar, a record of which I am very proud indeed. There was a limited amount and had to be set to suit the best purposes with no target ranges to help, and with a narrow channel to navigate made it quite difficult.

In connection with piloting I established private enterprises of my own, such as target ranges, range lights and float lights on turning points in the channel. These enterprises I maintained up to three years ago when both the American and Canadian governments took them from me and are now maintained at government expense. Strange as it may seem, but nevertheless true, wherever I would place my aids to navigation the government authorities would step in and take them over and utilize my positions. I was driven here and there and followed step by step by these officials until I finally had to give up the private enterprise.

There are other places on the river where aids could be placed which would be of benefit to navigation and I intended putting them up but have been waiting patiently to see if the government will place them in position. Should I put them up they will be known as the "Rouleau Aids" but watch the results, before two years the government will take them over and utilize them.

The steamer Edwin Holmes which ran on the breakwater shoal at Buffalo last week was released on Saturday after lightering part of her cargo. An examination to determine the injury to the vessel will be made before she leaves Buffalo.

SUMMARY OF NAVAL CONSTRUCTION.

The monthly summary of construction, published by the bureau of construction and repair, shows the customary rate of progress upon all naval vessels as follows:

ed for her new home on Puget Sound.

She came from the great lakes and stopped over in New York long enough to install a surface condenser, vacuum pump and other salt water auxiliary machinery, then pro-

Name of Vessel.	Building at—	—1907—	
		—Per cent of completion—	Aug. 1. Sept. 1.
BATTLESHIPS.			
Mississippi	Wm. Cramp & Sons.	90.32	91.97
Idaho	Wm. Cramp & Sons.	83.98	86.01
New Hampshire	New York S. B. Co.	80.00	83.00
South Carolina	Wm. Cramp & Sons.	19.59	21.70
Michigan	New York S. B. Co.	21.20	24.00
Delaware	Newport News S. B. Co.
No. 29	Fore River S. B. Co.
ARMORED CRUISERS.			
South Dakota	Union Iron Works	98.00	98.90
North Carolina	Newport News S. B. Co.	86.34	88.99
Montana	Newport News S. B. Co.	80.00	82.58
SCOUT CRUISERS.			
Chester	Bath Iron Works	85.00	88.72
Birmingham	Fore River S. B. Co.	82.90	87.75
Salem	Fore River S. B. Co.	82.67	86.57
SUBMARINE TORPEDO BOATS.			
Submarine T. B. No. 9	Fore River S. B. Co.	99.00	99.00
Submarine T. B. No. 10	Fore River S. B. Co.	97.00	99.00
Submarine T. B. No. 11	Fore River S. B. Co.	99.00	99.00
Submarine T. B. No. 12	Fore River S. B. Co.	97.00	99.00
COLLIERS.			
Vestal	Navy Yard, New York	36.88	43.00
Prometheus	Navy Yard, Mare Island	0.70	0.70
TUG BOATS.			
Patapsco	Navy Yard, Portsmouth	17.00	21.00
Patuxent	Navy Yard, Norfolk	12.00	18.00

SHIP BUILDING IN THE UNITED STATES.

The bureau of navigation reports 330 sail and steam vessels of 133,092 gross tons built in the United States and officially numbered during the quarter ended Sept. 30, 1907, as follows:

	WOOD				STEEL				TOTAL	
	Sail		Steam		Sail		Steam		No.	Gross
	No.	Gross	No.	Gross	No.	Gross	No.	Gross	No.	Gross
Atlantic and Gulf.	27	7,689	102	3,206	1	63	17	31,533	147	42,491
Porto Rico	1	7	1	7					1	7
Pacific	5	1,677	65	8,358			2	2,622	72	12,657
Hawaii										
Great Lakes	3	41	36	1,084			17	75,830	56	76,955
Western Rivers			54	982					54	982
Total	36	9,414	257	13,830	1	63	36	109,985	330	133,092

During the corresponding quarter ended Sept. 30, 1906, 296 sail and steam vessels of 102,748 tons were built.

IROQUOIS' PERFORMANCE.

The steamship Iroquois, built by the Craig Ship Building Co. of Toledo, O., about seven years ago, was equipped at the time with a battery of four Roberts safety water tube boilers, having a combined grate area of 224 sq. ft. which furnished steam to a triple expansion engine, which drove the boat at a speed of twenty miles per hour. The Iroquois was operated on Lake Michigan for a couple of years, was then sold and went to Lake Superior. Last winter she was sold again to parties in Seattle, Wash., and in January start-

ceeded around Cape Horn to Seattle, making three stops for supplies and completing the run from New York to destination in fifty days.

When she arrived at Puget Sound she reported ready for duty and was immediately put into service by her new owner, who states that as far as the Roberts boilers were concerned she could have turned around immediately and made the trip back to the great lakes without even having to wash the boilers out. This speaks volumes in favor of the Roberts safety water tube boiler as it not only proves its adaptability to

long deep sea voyages but puts the celebrated run of the United States battleship Oregon and the United States gunboat Marietta decidedly in the background.

SPEED TRIALS OF LONCHI.

The official full-speed trial of the destroyer Lonchi (Lance) built for the Greek government by Messrs. Yarrow & Co., of Poplar and Glasgow, took place on Wednesday, Sept. 18, at the mouth of the Thames, off the Maplins, when a speed, carrying a load of 60 tons, of 32.427 knots was obtained over the measured mile, and during a continuous run of three hours, 32.535 knots. The steam pressure in the boilers was 250 lb. per square inch; the air pressure in the stokeholds, 1½ in.; revolutions, 415. During a previous trial at a cruising speed of 14 knots, 35.9 knots were run to the ton of coal burnt, giving a radius of action at this speed of 3,231 knots. The Greek navy was represented by Capt. Hepites, the chief of the commission, Mr. Leondopoulos and Mr. Carpetopoulos. The Lonchi is 220 ft. in length, and is the third destroyer of this type constructed for the Greek navy by Messrs. Yarrow.

ELECTRIC COMPANY'S SUIT.

A motion for preliminary injunction was brought in the United States circuit court for the middle district of Tennessee by the General Electric Co. against the city of Nashville, Tenn., to restrain the city from the further use of some alternating current generators manufactured by the Bullock Electric Manufacturing Co. of Cincinnati. These generators have laminated pole pieces attached to the revolving field spider by means of bolts from the spider engaging a transverse bar embedded in the pole piece, a construction covered by the Parcell Patent No. 463,704, granted Nov. 24, 1891, which has been heretofore sustained by the courts. Judge Clark holds that the defendant has not produced any new matter tending to invalidate the patent and that, therefore, there is no reason why injunction should not issue, this patent having previously been held valid by the court of appeals for the sixth circuit of Cincinnati in the case against the Bullock company on the same construction. The court allows the city of Nashville sixty days in which to change the pole pieces or to withdraw the machines from use entirely.

YOUNGER CAPTAINS FOR BATTLESHIPS.

In making public the names of five of the captains who are to serve on the ships of the line in the cruise to the Pacific shortly, Admiral Brownson, head of the bureau of navigation, said that it is the purpose of the administration to give the command of battleships to men who have more than four years to serve before reaching the age of retirement, 62 years. It will thus be seen that the administration means to give the experience of important commands to the younger element. The following have been ordered to prepare themselves for sea duty but the assignments have not as yet been made:

Capt. D. W. Ten Eyck Veeder, recently promoted, now on duty at Naval Academy.

Capt. Bradley A. Fiske, recently promoted, commanding the monitor Arkansas at Naval Academy.

Capt. Hamilton Hutchins, to be promoted from Commander Oct. 13, on duty at League Island Navy Yard.

Capt. V. L. Cottman, captain of Bremerton navy yard.

Capt. Walter C. Cowles, recently promoted, commanding the Franklin at Norfolk.

EARLY WHALING AROUND LONG ISLAND.

A curious light has been thrown on an early phase of the whaling industry by an old diary recently written by Col. John Gorham in Louisburg, under date of Feb. 20, 1745-46. It was submitted, says the *Boston Transcript*, to Dr. Samuel H. Green of the Massachusetts Historical Society, who pronounced it genuine.

"About whaling first in New England. An old man came from Long Island, one Lopez, a Dutchman, that had been used to whaling at Long Island, came to Barnstable and to Cape Cod, or Barnstable Bay, then abounding in whales, and my grandfather (Lieut.-Col. John Gorham) first fixt out with old Lopez, a whaling in ye year about 1680. Old Lopez was accounted a sort of a wizard, then after sometime ye Cape men learnt ye Nantucket men to be whalers."

Printed notes of this part of the diary may be found in the New York Genealogical Record, for July, 1897, page 134. It was the family notes only that were photographed. During the French and Indian wars from 1690 to 1745, the Barnstable "whale boats" were used to land troops along the coast.

SHIP YARD NOTES.

Roach's Ship Yard, Chester, Pa., has the steamship City of Savannah nearly completed. She is building for the Ocean Steamship Co., and will ply between New York and Savannah, being scheduled to sail on her maiden voyage to Savannah on Oct. 7. This vessel will be the largest and most sumptuously fitted steamer yet built for the route.

The New York Ship Building Co., Camden, N. J., launched the steamer Princeton for the People's Hudson River line on Saturday, Sept. 21. The Princeton is 440 ft. in length, 95 ft. in breadth, has three decks and is provided with sleeping accommodations for 2,000 people. She is the most luxuriously equipped vessel ever built for service on the rivers. The Princeton will go into commission next spring.

The Spedden Ship Building Co. of Baltimore, Md., is reported to be about to build two steel tugs of the type of the Robert H. Smith, recently sold to the Isthmian canal commission. This company has built several tugs for stock, all of which have been sold to the government and it is believed that the two new ones will be purchased by the canal commission. The company already has the machinery necessary for the tugs.

The ship yards of J. W. Dickie, at Alameda, Cal., have been purchased by the newly-organized firm of D. J. Hanlon & Co., and the yard will hereafter be run in connection with the United Engineering Works, making a combination of dry docks, engine works and wooden ship building plant. Mr. Hanlon has for seven years been in charge of the Dickie yard, acting in the capacity of superintendent.

VESSEL WASTAGE.

Lloyd's statistical summary of vessels totally lost and condemned during 1906 reveals a total of 284 steamers of 367,176 gross tons and 431 sailing vessels of 249,454 gross tons, of these 15 steamers of 14,988 gross tons and 99 sailing vessels of 58,042 gross tons were of American register. It should be stated, however, that these figures are exclusive of vessels totally lost on the great lakes.

Capt. Thomas Hagan, for a number of years master of the tug Schenck at the Sault, will bring out the new tug A. C. Harding of the Great Lakes Towing Co.'s fleet. The Harding on her initial trip will pick up the schooner Wayne at St. Ignace and take her to Cleveland.

ANNUAL MEETING OF AMERICAN SHIP BUILDING CO.

The annual meeting of the stockholders of the American Ship Building Co. was held at Jersey City, N. J. on Wednesday. All the retiring directors were reelected and Philip H. McMillan was chosen to fill the vacancy caused by the death of his brother W. C. McMillan. All the old officers were reelected as follows: W. L. Brown, chairman of the board; James C. Wallace, president; R. C. Wetmore, vice president and treasurer; O. J. Fish, secretary; Robert Logan, general manager. Philip H. McMillan was elected a member of the executive committee to succeed W. C. McMillan. President Wallace's report was as follows:

The company has again passed through a successful year. The lake business in general is increasing and new and modern tonnage is being added to keep pace with the increase in bulk, package freight, and passenger business.

CAPITAL STOCK.

Remains unchanged from last year, viz.: AUTHORIZED.	
Preferred	\$15,000,000
Common	15,000,000
 Total	\$30,000,000
ISSUED.	
Preferred	\$7,900,000
Common	7,600,000
 Total	\$15,500,000

DIVIDENDS.

Regular quarterly dividends of $1\frac{3}{4}$ per cent have been paid on the preferred stock; and regular quarterly dividends of 1 per cent and an extra dividend of 2 per cent have been paid on the common stock.

PROPERTY OWNED AND CONTROLLED.

CLEVELAND, OHIO.

Construction Yard, Machine Shop, Foundry, Boiler Shops, Three Dry Docks.

LORAIN, OHIO.

Construction Yard, Two Dry Docks, Machine Shop.

DETROIT, MICH.

Machine Shops, Boiler Shops, Foundry, Brass Works, Three Dry Docks.

WYANDOTTE, MICH.

Construction Yard, Machine Shops.

SUPERIOR, WIS.

Construction Yard, Machine Shop, Two Dry Docks.

CHICAGO, ILL.

Two Construction Yards, Two Machine Shops, Three Dry Docks.

MILWAUKEE, WIS.

Machine Shop, Two Dry Docks.

BUFFALO, N. Y.

Construction Yard, Machine Shop, Four Dry Docks.

WEST BAY CITY, MICH.

Construction Yard, Machine Shop.

CONDITION OF THE PROPERTY.

All of the improvements that the company had started last year at its various plants, including new dry dock, new punch shop and two new additional building berths at Lorain,

O., have been completed and are now in operation. The plant and dry docks of the Shipowners Dry Dock Co., of Chicago, Ill., have been purchased without the issue of additional stock, and are now in operation. There have been no incumbrances of any kind placed upon the property during the past year.

VESSELS BUILT.

Plants.	Vessels Built.	Carrying Capacity.
		New Tons.
Superior	2	21,000
Lorain	6	58,000
Cleveland	4	28,000
Detroit	3	27,000
Bay City	5	52,000
Buffalo	1	3,000
Chicago	4	45,000
 TOTAL.		25
Vessels built		234,000
Carrying capacity, net tons		(Carrying capacity is based on 19 ft. draught.)

SUMMARY AND PROSPECT.

The company has built and completed twenty-five vessels during its fiscal year, and now has under contract thirty-nine vessels. All are being built to carry bulk and package freight, and there is a large inquiry for passenger vessels. The success of general passenger vessels on the lakes during the past two or three years, is demonstrating that much larger and more commodious vessels are in demand and that with their construction there will be a large increase in lake travel, which is growing rapidly, and each season finding more people who appreciate and desire the rest and pleasure of the great lakes trip.

Your president desires to thank the officers of the company, directors and stockholders, for their continued hearty co-operation and most efficient support. The condensed balance sheet

herewith shows the condition of the company.

Respectfully submitted,

JAMES C. WALLACE,
President.

W. L. BROWN.

Chairman of the Board.

In the death of the late William C. McMillan, of Detroit, a director and member of the executive committee, your company has lost a devoted friend to its interests, and one much regretted by all of his associates in this company.

Since the opening of navigation, 243,549,685 ft. of lumber were received at the Tonawandas by vessel, a decrease of 72,818,803 ft. as compared with the corresponding month last year. During September 45,766,646 ft. were received, the smallest amount for any month this summer, while during September of last year the receipts aggregated 64,043,187 ft., the largest amount for any one month during that season. The decreasing receipts are attributed to a certain extent to the extensive delay in canal traffic by the break at Syracuse.

The steamer Corona of the Pittsburgh Steamship Co.'s fleet while out in a severe blow off Ashtabula Tuesday night had the port side of her cabin smashed in, water rushing in and flooding the dining room and destroying the cook's galley. She put into Ashtabula for repairs.

The steamer Rand, bound down, struck the north Limekilns crossing lightship last Friday and carried it away. After temporary repairs were made, the lightship was returned to its position, but in a leaking condition. Lightkeeper Quinlan had his head severely injured in the mixup.

ANNUAL STATEMENT.

RESOURCES.

Plants and property	\$16,375,404.88
Additions to plants	756,119.97
Material on hand (market value)	792,049.36
Accounts and bills receivable	3,755,771.93
Due us on construction contracts	3,948,268.23
Cash	630,608.51
 Total	\$26,258,222.88

LIABILITIES.

Capital stock preferred	\$7,900,000.00
Capital stock common	7,600,000.00
 Accounts and bills payable	\$15,500,000.00
Reserve for maintenance	4,433,678.34
Reserve for fire insurance	500,000.00
 Earnings	128,934.18
LESS:	628,934.18
Dividends, preferred	\$553,000.00
Depreciation and maintenance	497,168.29
Rebuilding docks, etc.	204,165.61
 Total	\$1,254,333.90
Balance June 30, 1906	\$1,053,445.35
Less common div. 6 per cent	456,000.00
 Working capital, June 30, 1907	4,642,165.01
Total	5,695,610.35
	\$26,258,222.88



DEVOTED TO EVERYTHING AND EVERY
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THE PANAMA CANAL.

The construction of the Panama canal will probably be the last of the great physical divisions that man will make of the globe. It will make an island of a hemisphere. Three years have passed since work upon the canal was authorized but little has been accomplished to justify the predictions of its sanguine advocates that it could be completed in eight years. Aside from lowering the grade of the Culebra cut, there is very little of a tangible character to show from the millions that have been poured into the Isthmus. Of course, this is hardly a fair statement because energies have been very wisely directed towards improving sanitary conditions obtaining there. When the French

undertook the construction of the canal twenty-five years ago it was stated that a man laid down his life with every railroad tie and the statement was probably not exaggerated. Yellow fever raged throughout the country and carried off thousands of workmen. The science of sanitation was not at that time as well understood as now. For instance, it did not occur to the projectors that the common mosquito was the most prolific instrument in the dissemination of contagious diseases. They carried the germs of yellow fever from camp to camp and thoroughly inoculated the army of workmen with the virus of this deadly fever. The first thing that the American government did was to attack the mosquito problem in a thoroughly practical way. As swamps are the breeding grounds, such swamps as could be drained were drained; such as could not were sprinkled with petroleum, which is, as is well known, fatal to mosquito life. Other insect pests were also thoroughly studied and their habits well defined. It was discovered that the most annoying of these inhabited grassy plats only and could not thrive upon gravel walks. The workmen were cautioned against walking through the brush and grass and requested to keep on the walks in passing from their houses and their work. In this way they absolutely escaped from any annoyance which was making their lives intolerable. The water problem was solved by damming one of the rivers many miles away from the scene of operation and carrying the water in pipes to the workmen. The advantages of an abundance of pure water at all times has done much towards mitigating the hardships under which man labors in the tropics. These have been broadly the things that the experts of the American government have attacked during the past three years rather than the actual work of canal construction.

When the French left the Isthmus after the collapse of Panama securities in France, and when no more money could be secured from French investors, they left everything behind. They may be said to have evacuated

the Isthmus much after the manner of a defeated army, leaving their equipment and accoutrements of all sorts on the field. Three years ago when the American government took possession, by right of purchase, locomotives, dredges, steam shovels, steel rails, shovels, picks and all implements needful to the prosecution of such a work, were lying all along the line of the canal in a state of hopeless rust and decay. A thorough inventory was made of all this equipment and as much of it was saved as was possible. It was found, however, that what had not become obsolete through mechanical evolution had suffered the corrosion of the elements so sadly as to be useless.

This, therefore, is the situation. The American government has spent \$40,000,000 for a strip of land across the Isthmus of Panama through which to construct the canal. It has during the past three years spent at least \$20,000,000 in preliminary surveys and the work outlined in this article. All this may be said to be merely scratching the surface. The prediction is here made that instead of the allotted ten years it will take 25 years to complete the canal and that instead of the \$250,000 which was allowed as a maximum estimate, it will take \$1,000,000,000. What will the United States have after this tremendous expenditure of time energy and money? It will simply have a ship canal connecting the Atlantic and Pacific oceans, obviating the necessity of rounding the Horn in the all-water route from New York to San Francisco. Is the commerce in sight to justify this stupendous outlay? It is not. When the canal is completed, it is not expected that more than 10,000,000 tons will be moved through it. There is a little canal in the upper peninsula of Michigan which with its locks overcomes the fall of Lake Superior into Lake Huron. During the present year 60,000,000 tons will pass through this canal, or six times the estimated tonnage of the Panama canal.

When the situation is analyzed it is somewhat difficult to see where the commerce is coming from to make the Panama canal a commercially

sound venture. That commerce which now reaches the Orient from the workshops of Europe through the Suez canal will still continue to employ that waterway because the distance is shorter. Sailing ships will still continue to go around the Horn because they can not beat their way through the canal. England will still continue to ship its products to Australia through the Suez canal, owing to geographical advantages. The same condition will obtain even to the Philippines. Really in a commercial sense the canal's chief work will be in the movement of freight from the eastern seaboard of the United States to the western coast of South America, a part of the hemisphere which is not thoroughly reached by American products. It is mere conjecture as to how much this trade will be, but it ought to be considerable. It has always been a scandal that South American trade should be almost entirely absorbed by England. Neighbors of ours, a part of our own geographical domain, protected by the operation of the Monroe doctrine, having a numerous and wealthy population, their needs nevertheless have been filled by alien countries. We have but to examine our trade balance to discover how striking this is. We buy from South American countries millions of dollars worth of products, in fact, hundreds of millions, per annum, whereas the money which they annually ship to England for supplies is fabulous.

South America is a great grain country, one of the greatest granaries in the world. The United States is a great grain country and through necessity has developed some ingenious implements for garnering the crop. Whenever a people have been confronted with an inventive problem necessity has solved it, for necessity is truly the mother of invention. It is quite natural, therefore, that in the devising and making of agricultural implements the United States should take first place. The superiority of the American made agricultural implement is unquestioned and is generally recognized throughout the world; and yet notwithstanding this,

implements that are used in South America are supplied by British houses. The reasons for this is clear but is not altogether honorable to the United States as a patriotic body of citizens. It is because the United States possesses no means within itself of reaching this extensive market. It is necessary to ship everything there in foreign bottoms. Obviously a nation will work for itself rather than for its competitors. If an American implement is dumped upon a Liverpool dock for transshipment to South America and there should happen to be lying there a somewhat similar implement of British manufacture what more natural thing than that the British implement should be given preference in transportation. It will reach the South American market weeks ahead of the American implement and in all probabilities will be purchased and put to use long before the American one reaches them because crops can not remain standing in the fields. They must be harvested when they are ripe. Time and time again have American implements been ordered and been delayed in transshipment and have reached their destination when the harvest was over. It is a perfectly natural act on the part of the person so ordering to decline to receive it when it arrives too late to be of any service to him. This is all a part of the commercial warfare of nations. While not altogether fair, it is probably legitimate according to the commercial code of honor. What the United States should do is to make itself self-contained and to project its own line of steamers direct from North American ports to South American ports. If private capital can not do this, owing to the higher cost of constructing and operating steamships such capital should be assisted by a generous subsidy from the general government, sufficient to overcome the handicap imposed upon open competition by our fiscal policy of protection. Herein also lies the great hope of the Panama canal to the American people. It certainly will bring the western coast of South America many thousands of miles nearer to the At-

lantic workshops of the United States than it is now. With the distance reduced twice over there ought to be a corresponding reduction in the freight rates which added to a government subsidy should bring the South American markets well within the sphere of influence of the United States. This is the one great performance that the canal can do for the American commerce. If it can win this great market for us there will be some satisfaction aside from the great consideration of national defense in having constructed this immense artificial waterway.

NORTHERN PACIFIC BRIDGE DAMAGED.

The United States Lake Survey at Detroit is notified that the steamer Hoover & Mason ran into the north pier of the Wisconsin draw of the Northern Pacific railway bridge across St. Louis Bay, at 2 o'clock on the morning of Oct. 2, knocking down the pier and throwing it into the channel. The pier is of stone masonry and the wreckage forms an obstruction in the northerly portion of the north drawspan opening, with least depth of 10 ft. over it. Maj. Graham D. Fitch, United States engineer at Duluth, has marked the edge of the obstruction with two buoys flying red flags. There remains a width of 70 ft. of unobstructed channel next the center pier, with 22 to 25 ft. of water, through which tugs and small steamers can safely pass; but larger vessels should take the unobstructed south opening. Steps have been taken by the railroad company to have the obstruction removed by the Reid Wrecking Co., whose plant is already on the ground.

Capt. Henry Peterson of the steamer Wilpen has written to the Akers Steering Gear Co. of Chicago that he considers the Akers gear as an emergency gear as near perfection as possible. He also used it once for part of the trip as the regular gear. He adds: "When used as the regular gear I am free to say that I never used or saw any better, having used it twice over the Limekiln crossing. In the four trips the Wilpen has made since leaving the ship yard, the Akers gear has more than paid for itself for the time alone that it has saved the ship."

THE SAILORS LOG BOOK

Commencing with this issue the MARINE REVIEW opens another department for the benefit and convenience of all lake men. Hereafter, under the above heading will be found each week a summary of all the aids and improvements to navigation and such other information that will be of practical value to those who have in their charge the navigation of vessels. The object of this department is to keep the master in touch with all the changes and improvements made on the chain of lakes. The information will come from various sources and as all these sources will be embodied into one its importance and convenience to the public will be readily appreciated. A master in discussing this subject recently, said: "As we are dependent upon so many different publications for this information, it not only makes it difficult to keep track of them all, but we miss many of them besides, through one cause or another. If all this information were put under one department and we knew that we could find it there and could depend upon it it would supply a long and urgent need. The daily press, as a rule, publishes this information, but we miss so many of these papers that no reliable account of these instructions can be kept."

The MARINE REVIEW desires the cooperation of its readers in the conduction of this department, especially suggestions and recommendations along these lines. All questions coming under this special department will be looked up and answered, and any other information of this nature will receive attention.

NEW DETROIT RIVER CHANNEL.

Downbound boats are now using the new channel at the mouth of the Detroit river beyond the Detroit river lighthouse. This is a channel laid out and buoied by the Lake Carriers' Association. It passes westward of the Detroit river light and extends quite a distance past the light and into Lake Erie. In the new channel the depth of water is 23 ft. and the width is 400 ft. It is marked by sixteen buoys, all lighted at night. There are eight black buoys on the starboard side of downbound boats and eight red buoys on the port side. Emphasis is laid on the fact that the new channel is for the use of downbound vessels only. All upbound vessels will continue to use the old channel.

Concerning this channel President Livingstone has issued the following notice:

To Masters and Pilots:—Owing to the frequent groundings which have occurred lately at Bar Point, causing serious delay and expense to our members, we have arranged with Col. Chas. E. L. B. Davis, United States engineer in charge, to use that portion of westerly channel which has just been completed from a short distance this side of Detroit river lighthouse out to deep water. This channel extends a distance of about 11,500 ft. to deep water in Lake Erie, running to the westward of Detroit river lighthouse with a width of 400 ft. and a depth of 22.7 at mean stage of water.

We have at our own expense placed sixteen buoys, seven black spar buoys and seven red spar buoys, from Bar Point lighthouse to outer end of channel in Lake Erie, and one red and black

and one black buoy 1,500 ft. north of lighthouse. Have contracted for lighting these sixteen buoys, and in addition six black spar buoys between the Light and Bar Point lightship. There will therefore be fourteen black spar buoys, seven red spar buoys and one black and red lighted at night. These buoys and lights are now all in operation.

Two acetylene gas buoys are now on way and on arrival will be placed at outer end of channel, taking the place of the two outer end spar buoys. We expect to have these gas buoys in position and lighted about October 16.

Col. Chas. E. L. B. Davis, the United States engineer in charge, has issued the following regulations to govern the use of this channel:

All down bound vessels, after passing the Bar Point lightship shall keep the black spar buoys closed aboard, and pass to the westward of the Detroit river lighthouse.

All up bound vessels shall pass to the eastward of the Detroit river lighthouse, entering the channel between the red and black spar buoy and the red gas buoy, this being the usual course.

For the best interests of our association, it is imperative that our masters and pilots carry out these regulations to the letter. Any violation of these rules will be subject to the penalties as prescribed by Section 4 of the river and harbor act of United States congress of Aug. 18, 1904. The text of these laws will be found by reference to our bulletin issued to masters and pilots of date Aug. 10, 1907. Chart showing new channel and vicinity and aids thereto, accompany this bulletin.

W. LIVINGSTONE, President.

STEAMER NIMICK A MENACE TO NAVIGATION.

It is reported to the United States Lake Survey at Detroit that the steamer Alexander Nimick, which was wrecked Sept. 21 on the south shore of Lake Superior 11 miles west of Whitefish Point, now lies in 26 ft. of water 1 1/4 miles WNW from Vermillion life-saving station, and about 3/4 mile off the adjacent shore. No part of the wreck shows above water, and the boilers and engines are submerged about 2 ft. Under these circumstances, the wreck forms a menace to vessels of small or medium draft hugging the coast in offshore winds. It is about 1 mile in from the deep sailing course past this vicinity, and probably closer to the offshore reefs than large vessels should venture. A buoy was placed just outside the wreck on October 2

by the keeper of Vermillion life-saving station, from whom the above facts were obtained by Major Graham D. Fitch, United States engineer at Duluth. The Gilchrist Transportation Co. has been asked by Major Fitch to state their intentions regarding the marking or removing of the wreck.

BIG WORK COMPLETED.

According to a letter received by a local (Cleveland) vessel owner, the work of deepening the Sturgeon Bay canal to 21 feet is about completed. It has been carried on by Uncle Sam for several years, and cost hundreds of thousands of dollars. The canal, which connects Lake Michigan with Green Bay, is now navigable by the largest lake traffic. The deepening of the canal is an important event to the commercial interests of the western shore of Green Bay. In fact, it is second in importance only to the digging of the canal. All across, and down the lake traffic to and from Green Bay, Menominee and Marinette, is through the canal.—Ex.

The work at Sturgeon Bay consisted of dredging the channel through the draw bridge and the middle ground or flats in the immediate vicinity of Hill's Pt. The government has maintained a 21-ft. channel through the Sturgeon Bay canal and the bay itself for the past four years, but as this depth was not carried through the bridge this waterway was of no account to boats drawing more than 15 ft. This season the channel leading through the bridge was dredged out and made to conform to the remainder of the dredged out. In addition to this the west side (being the east bank) of the flats across the channel from Hill's Pt. (marked by a gas buoy painted black and a black stake on each side of it) was dredged away to widen that channel. This was done so that boat can run on Dunlap Reef ranges without grounding on the east bank of the channel. The Dunlap Reef range lights were built to show the range or direction of this channel, but through some error the range was misplaced and in order to use them it was necessary to keep them open a little to the westward to avoid the middle ground. Many boats have gone aground at that point in the night time on this account, their captains not knowing the difference, and many of those that did know it would get on on the opposite bank by keeping over too far in avoiding the east bank.

Sturgeon Bay was always considered a mean hole to get through, especially in the night time and by strangers, and so it was, but now that this channel has been widened and also marked with a gas buoy, and the range lights are available for the purpose intended, there is no further danger from these

obstacles. Boats in the Green Bay trade can many times use this channel to the very best advantage; for instance, supposing a vessel loads at Green Bay city for below, and gets away from there along about noon, and the weather is bad, fog or snow, and the captain is anxious to get out of the bay in daylight, either through the door or Rock Island passages. By using Sturgeon Bay and the canal he can make the trip in day light and avoid the island and shoals at the north end of Green Bay. The one thing to remember in going through Sturgeon Bay from the canal is that the red buoys are to be left on the port side and the black ones on the starboard side. This has fooled many a good skipper. The channel is marked according to a boat coming in from Green Bay, this being the natural entrance and the canal the artificial one.

LIGHT NEEDED AT DULUTH.

Vessel captains who have been running to Duluth this season are unanimous in the opinion that a bright light is badly needed on the north pierhead at Duluth.

"The present range lights at Duluth are all right where they are," said a skipper who had recently been at that port, "but on a dark, rough night a boat would have to be abreast of the pierhead before her officers could distinguish it, and determine exactly how he is entering the harbor. A bright red or green light should be placed there. A simple post light would do if placed on a substantial structure, that would stand the seas that sweep over the pierhead. If the masters would decide upon what they want there, and ask for it in the proper way, they could get it soon."

Another captain suggests that every skipper going to Duluth attach to his clearance a demand for the light at the same time signifying the color of light he prefers.

INTAKE PIPE IN NIAGARA RIVER AT TONAWANDA, N. Y.

The United States Lake Survey at Detroit has received word from Col. H. M. Adams, United States engineer at Buffalo, that the city of Lockport is excavating for a trench for an inlet pipe in the Niagara river at the foot of Tonawanda Island. Two dredges are at work, and these will move out of the way of vessels on signal. The trench extends from the east shore of the river to the point where the intake is to be constructed, 1,300 ft. west from the foot of Tonawanda Island. The Lake Survey is informed also that dredging is in progress between the two lower en-

trance channels in the harbor of Ogdensburg, St. Lawrence river. This work will continue during the present season.

DREDGING IN SUPERIOR HARBOR BASIN.

The United States Lake Survey has received notice from Maj. Graham D. Fitch, United States engineer at Duluth, that a deep channel 135 ft. wide has been dredged through the shoals in Superior Harbor Basin just off the mouth of the Nemadji river, and the banks are marked by small red and black spar buoys, black on south side and red on north side of channel. The south edge of the dredged cut passes 85 ft. off the point of shore on the east side of the mouth of Nemadji river. The dredges are still working on the north side of the channel to further widen it, and the red buoys on this side will be set back as the width increases. Vessels drawing 21 ft. can now run from the Superior entry up into the Superior front channel, where the deep water is 400 ft. wide, by keeping south of the dredges and between the buoys above referred to.

UNCHARTERED REEF, NORTH END OF LAKE MICHIGAN.

The United States Lake Survey steamer Search, engaged in sweeping the north end of Lake Michigan, has reported the discovery of an uncharted ledge of rock about 400 ft. in diameter, lying $2\frac{1}{4}$ miles south by west (true) of Point aux Chenes, and $2\frac{1}{2}$ miles northwest of St. Helena Island.

The crest of the ledge shows $19\frac{1}{2}$ ft. of water at the present high stage of Lake Michigan.

Vessels taking the lee of the shore in northerly gales should take warning. Northerly storms drive the water to the south end of the lake, with consequent lowering at the north end.

LIGHTS, FOG SIGNALS AND CHARTS.

The 1907 edition of the "List of Lights and Fog Signals of the United States on the Northern Lakes and Rivers and also of the Lights and Fog Signals of the Dominion of Canada on Those Waters," has just been issued by the United States lighthouse board. The work is corrected up to July 15 of this year. A copy of the list is sent free to any ship master on application to the Lighthouse Board, Department of Commerce and Labor, Washington, D. C., or to the Lighthouse inspectors at Chicago, Buffalo or Detroit. The MARINE REVIEW acknowledges with thanks two copies of the work from the lighthouse department. Every pilot should have one of

these lists and he can get one by writing to any of the addresses given above.

Another good thing about the General Chart of the Lakes recently published by the United States Lake Survey office, is the 10, 25, 50 and 100 fathom curves printed on it. These fathom curves are of the greatest assistance to the navigator in the correct use of the lead. These lines should be added to all its charts and every navigator should make proper use of them. The lead and fathom curves used in conjunction is a much neglected practice in coast navigation.

ERRATA.

In the article published in the MARINE REVIEW last week on "Marine Motive Power of the Future," an error occurs in the third paragraph from the end on page 51. In one instance the word "oppositions" is used instead of the correct phrase, "in opposite directions," and the letters H. P., meaning high pressure, were spelled out to mean horsepower. The paragraph is herewith published in its correct form:

"In the ordinary triple or quadruple engine, with cylinders of varying diameter, and with steam and inertia stresses also varying widely the disturbing element, if any exists, acts twice in each revolution, in opposite directions, and may be due to either working or inertia stresses or both. The difference in steam stresses, for instance, in the example used, is shown very clearly—the L. P. maximum strains are nearly 50 per cent higher than the H. P., while the inertia strains are of necessity also much higher. This may or may not create vibration, depending on the period of the ship, which, again depends upon her trim and the disposition of weights."

Capt. Charles Gunderson of Chicago, who brought out the new steamer General Garretson of the Gilchrist fleet early during the present season, has resigned the command of the vessel on account of poor health. Capt. Gunderson has been in command of vessels of the Gilchrist fleet for about twenty years, having begun his career on sailing vessels. Capt. Lierre Bouille, who was on the steamer City of Venice, has been assigned to the General Garretson. Capt. Bouille will be succeeded by Capt. A. W. Holmes, now in command of the steamer Olympia, while Capt. G. McDonald of the steamer Lansing goes on the Olympia. A mate of the steamer Lansing will take command of her.

AROUND THE GREAT LAKES.

A new chart in colors of Ogdensburg and Prescott harbor has just been issued by the United States lake survey and is for sale by the MARINE REVIEW.

The floating dry dock owned by James DeGrace and operated by F. W. Wheeler of Bay City has been sold to James Demarest of Toledo. It will be towed to Toledo.

Capt. W. C. Richardson, of Cleveland, has sold the steamer Iroquois to the Montreal Transportation Co., Montreal. The Iroquois is 242 ft. keel, 41 ft. beam and was built in 1892.

The steamer H. B. Sill of the Gilchrist fleet took on 10,592 tons of coal at Ashtabula last week at M. A. Hanna & Co.'s dock in ten hours' actual working time. She also took on 315 tons of fuel.

The second largest cargo of iron ore ever carried to Toledo was unloaded at that port on Monday by the steamer Charles Weston at the dock of the Toledo Furnace Co. It consisted of 10,350 tons.

The barge George G. Houghton, owned by Sullivan & Co., of Toledo, sank abreast of the American light at Bar Point on Sept. 10 while navigating channel with only the spars visible and will interfere with the passage of the boats.

The schooner J. W. Westcott sprang a leak several miles off Milwaukee Sunday morning and became waterlogged. The Westcott was later in the day taken into the port of Milwaukee by the tug Simpson and run aground in six feet of water.

Excellent progress is reported on the Lake Shore dock improvements at Ashtabula and the big extension is expected to be completed by the opening of navigation next year. An enormous sum of money is being spent on this improvement.

The steamer Midland Prince bound up with coal struck at the dyke near the Sault through the parting of her steering gear. No. 1 tank on the starboard side was full of water and she had to be temporarily repaired before proceeding on her journey.

The steamer Wm. B. Kerr of the Weston Transit Co.'s fleet, is in dry dock at Superior. Forty of her plates will be removed and sixty frames straightened. The Kerr is the first of the 605-ft. class on the lakes to be docked, and there are few docks which can accommodate her.

The tug John Kelderhouse built by

Benjamin Cowles was sold by her owners, John Kelderhouse and Mr. Cowles, to the Empire Engineering Corporation, New York. The Kelderhouse will be used by her new owners in their work on Black Rock harbor improvements.

The steamer Portage which was recently seriously damaged by fire in Marquette harbor, has been taken to Detroit by the steamer Frontenac where she will be repaired. Practically all of the upper works of the steamer were destroyed, causing an estimated loss of \$100,000.

M. E. Farr, president of the Detroit Ship Building Co., has announced that the new steamer City of Cleveland of the Detroit & Cleveland Steam Navigation Co.'s fleet, which was partially destroyed by fire last spring, but which is now being rebuilt, will be ready to go into commission in the spring of 1908.

The steamer W. H. Gratwick has been sold by the United States Transportation Co. to the Chicago & Duluth Transportation Co., of Chicago. She is operated in the package freight trade between Chicago and Duluth. The Chicago & Duluth Transportation Co. purchased the steamer Alva several months ago. This company was organized by Thomas Prindiville and other Lake Michigan vessel owners last year and the line has built up a good trade.

It is reported that General Manager B. W. Parker, of the White Star line, is planning to increase the fleet of the company by adding a new freight and passenger steamer next season. The present boats are inadequate for the amount of freight to be handled and a boat to care for this particular feature has long been needed. The new steamer, if built, will be smaller than the Tashmoo, carrying about 1,200 passengers with plenty of room for freight. The stockholders of the company will probably take up the project at their next meeting.

It is reported that a dangerous collection of rock and earth at the north end of the breakwater at Buffalo, which was marked by a can buoy up to last Saturday night, has been dislodged and swept out about a thousand feet down the Niagara river near the first spar buoy. The obstruction is now unmarked and vesselmen think it should be marked with a gas buoy so that vessels can pass on either side of the buoy, instead of having it located at the south end of the shoal as was the case before the buoy drifted away. The shoal is covered

by only seventeen feet of water.

The committee on lighthouses, which made an inspection tour of the lighthouses on Lakes Michigan and Superior recently, have decided to recommend the erection of various new lighthouses in these districts. It is proposed to replace the lightship on White shoal at the entrance of the Straits of Mackinaw by a lighthouse to cost \$250,000, and to erect a lighthouse also at the western extremity of Isle Royale, Lake Superior. North Manitou island will get a new lighthouse, which will have to be built in 17 ft. of water, the existing one, half a mile nearer shore, to be abandoned.

It took the little steel tug Beaumont thirty-three days to make the trip from Glasgow, Scotland, to Montreal. She will go into service at Midland as tender for a dredge. The crew of the tug, numbering nine men, relate that the tug had a rough time making the voyage. Capt. John Leggett was in command, but left upon the arrival of the tug at her destination. The man at the wheel is obliged to stand out in the weather while steering the boat. The sailors shipped for the trip at \$45 apiece, regardless as to the length of the voyage. The Beaumont is 75 ft. over all, 16 ft. beam and 8 ft. deep.

Running sand at the piers of the ship canal at Duluth has been causing the government engineers much trouble and expense. The sand has been sifting into the canal through several small holes in the wooden crib work and it has been necessary to place gravel on the outside of the piers at several points. The sand has not seriously affected the channel as yet, but if allowed to run it might become a menace to navigation and for some time the government engineers have been trying to stop it. Rocks have been dumped on the outside of the piers and the gravel will be thrown on the rocks.

The Department of Marine and Fisheries of Canada has just added a new telephonic marine signal system for the safety of large ocean vessels between Montreal and Quebec. Eleven stations have been established, situated at the following points: Montreal, Longue Pointe, Vercheres, Sorel, Three Rivers, Bastiscan, Cap a la Roche, Portneuf, St. Nicholas, Cap Rouge and Quebec. The service provides a system of communication which enables owners and managers to know of the progress of their vessels between these points. Six of the stations will be operated day and

night, while the remainder will be day stations only.

Capt. Reid of the Reid Wrecking Co. of Sarnia is about to raise the wreck of the steamer *Sevona*, which now lies in Sand Island shoals in the Apostle islands, Lake Superior. The wreck is the property of Capt. Reid, and his object in raising the steamer is to recover her machinery. The machinery will be removed first of all, after which it is expected that the cargo of iron ore aboard the *Sevona* when she sank will be taken out. The hull will either be raised or blown up. The *Sevona* sank in the big November gale of 1905. She is a steel steamer, 372 ft. long, and was formerly owned by James McBrier of Erie, Pa.

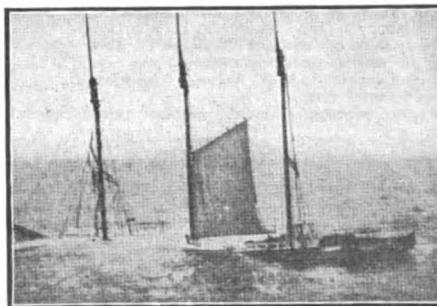
The purpose of the Great Northern railway, through the Eastern Railway of Minnesota, to go down Connor's Point on its proposed route at Superior is likely to meet with some opposition on the part of the Superior Ship Building Co., which owns a strip of land which is included in the desired territory and which it is said the railway interests seek to condemn for their purposes. The property was purchased by the ship building company to make room for the launching of the large vessels which it is now the practice to build at the yard and unless some readjustment of the yard can be made it would be put out of business by the building of the tracks.

The Canadian government has announced that it has under construction a breakwater at Port Stanley, Lake Erie. When completed this breakwater will be 35 ft. wide and will extend 1,000 ft. beyond the present Pere Marquette Railway pier, 200 ft. in a southwesterly direction and 800 ft. in a southeasterly direction, the end overlapping the axis of the entrance channel to the harbor between the two government piers. Two cribs, each 100 ft. long, have been sunk in position with their upper surfaces 1 ft. below the water level. Further cribs will be placed shortly. Mariners are warned to be cautious in approaching the harbor on account of these submerged obstructions.

ABANDONED AT SEA.

No doubt every deep-water traveler has listened to the many stirring and sensational accounts of dangers that have been encountered as a result of meeting in mid-ocean with derelicts, but it will have been given to a very few to have had the privilege of being at such close quarters with a real derelict as the one who took the above photograph must have been. The above snap-shot was taken from

the deck of the Royal mailship *Ivernia* on a recent voyage between Boston and Liverpool. The double-reefed mainsail set without other canvas tells a part of the story—hove-to in a gale, storm-racked and water-logged. The crew no doubt left the boat for fear that she would flop over on her beam ends or turn turtle. The wind-filled mainsail shows the vessel in the trough of the seas, and although low down in the water, she



A DERELICT SCHOONER.

is making some progress and steering herself. What a formidable object to encounter on a dark stormy night! This craft will probably drift for weeks before it is torn to pieces by the elements, the lumber keeping the hull afloat so long as it remains intact.

WRECK OF THE STEAMER SEVONA TO BE REMOVED.

The United States Lake Survey at Detroit is informed that the wreck of the steamer *Sevona*, which has been lying sunk for two years on a rocky reef about 1½ miles E. by N. of Sand Island light, Apostle Islands, Lake Superior, will be removed. The Reid Wrecking Co. now owns the sunken vessel and will undertake the removal operations as soon as the weather permits.

The *Sevona*, a steel steamer 372 ft. by 41 ft., built in 1890 and formerly owned by James McBrier of Erie, Pa., was wrecked with a cargo of iron ore near Sand Island during the gale of Sept. 1-2, 1905. The crest of the wreck is about 6 ft. below the water surface, forming a menace to navigation, and the Reid company has placed two unpainted spar buoys to mark the location.

Capt. James Reid of the wrecking company states that the boiler and machinery will first be removed, then the cargo of iron ore, and afterwards the hull will be either raised entire or blown to pieces for the scrap.

Herman A. Olsen of Milwaukee has sold the schooner *Mary E. Cook* to Claus Weberg of Menominee, Mich.

ASBURY PARK'S PERFORMANCE.

The steamer *Asbury Park*, built by the William Cramp & Sons Ship & Engine Building Co., of Philadelphia, Pa., about four years ago for the Central Railroad of New Jersey for operation on their Sandy Hook route, after two years a 9,000 H. P. battery of Roberts safety water tube boilers containing about 500 sq. ft. of collective grate area was substituted in exactly the same space occupied by the old boilers. With the latter a pressure of 5 in. of air was maintained under the grates by the Sturtevant blowers, notwithstanding which however, sufficient steam could not be maintained to run the engines or the boat up to required speed.

Roberts safety water tube boilers have now been in the *Asbury Park* the same length of time as the old boilers. They are giving perfect satisfaction, furnishing more steam than the engines can use with everything wide open and without using any forced draft whatever. They are not only furnishing plenty of steam but the steam is more than dry and highly elastic. The *Asbury Park* is making her trips in better than schedule, as given on the time table, on every trip.

The Roberts boilers have not been cleaned internally since they were put in the boat upon removing a tube recently it shone inside like a gun barrel. The tube removed for examination was one directly next to the fire, purposely selected from the hottest point where scale would be most likely to bake onto the surface.

On July 4, while running an extra trip, the *Asbury Park* had an opportunity to try conclusions with the renowned Monmouth from Robin's Reef to southwest Spit Buoy. The run was made in 40 minutes, the *Asbury Park* winning by over half a mile. The *Monmouth* was using the blowers while the *Asbury Park* was not only running under natural draft conditions but with the furnace doors partly open.

Inasmuch as no changes were made to the *Asbury Park* except the boilers, and some joiner work on the upper decks, it would seem that all the credit for this phenomenal improvement must be given to the Roberts safety water tube boiler.

Capt. C. S. Boyce, master of the steamer *Maruba*, was compelled to leave his steamer on account of sickness. Capt. C. H. Woodford is now in charge of the steamer.

ACCIDENTS OF A MONTH

Accidents to lake vessels during the past month, while equal to those of the preceding month in number, have proved far more disastrous. Five vessels were totally wrecked, while the injuries inflicted upon many others

were quite serious. The wreck of the steamer Alexander Nimick during a recent Lake Superior gale, may be recorded as the greatest loss of the present season. The loss of the Nimick together with her cargo is esti-

mated at \$50,000. In addition to this, six members of her crew lost their lives.

Another serious loss was that of the steamer Majestic, which burned to the water's edge on Lake Erie,

DATE.	NAME OF VESSEL.	NATURE OF ACCIDENT.	PLACE.
Sept. 10	Str. H. A. Root.....	Turned turtle sank at dock.....	Kenosha, Wis.
Sept. 10	Str. S. B. Paige.....	Driven ashore in gale; total loss.....	Green Bay.
Sept. 11	Sch. Maria Martin	Broke from moorings; drifted onto bridge.....	Detroit river.
Sept. 11	Str. Odanah	Grounded owing to low water.....	Detroit river.
Sept. 11	Str. E. L. Wallace.....	Caught by anchor of steamer Bransford; four plates, one frame and piping in engine-room damaged.....	St. Clair river.
Sept. 11	Str. Bransford	Ripped Str. Bransford with anchor; uninjured.....	St. Clair river.
Sept. 11	Sch. H. D. Moore	Ran ashore; total loss.....	S. Manitou Island, Lake Michigan.
Sept. 11	Str. Olympia	Ran ashore to prevent sinking; released after lightering; docked at Cleveland	South Shore of Lake Erie.
Sept. 11	Str. Mariska	Ran aground; released after lightering.....	Stag Island, St. Clair river.
Sept. 11	Str. Manistique and Northern No. 1	Collided with unknown steamer; hole punched in side by anchor.....	Lake Michigan.
Sept. 11	Str. La Salle	Ran aground; released	Lake Superior, near Pt. Iroquois.
Sept. 11	Bge. Pentland	Ran into spiles; pumped out and released.....	Ludington, Mich.
Sept. 12	Str. Mataafa	Ran ashore; released after lightering.....	Harwood Pt.
Sept. 12	Str. Hendrik S. Holden	Ran aground; released uninjured.....	Near Sandusky.
Sept. 13	Str. David W. Rust.....	Struck by Bge. C. C. Barnes which she had in tow and grounded; stem badly twisted	Point Pelee, Lake Erie.
Sept. 13	Bge. C. C. Barnes	Ran into Str. Rust; bow badly damaged.....	Point Pelee, Lake Erie.
Sept. 15	Str. Atlantic	Broke inboard shaft; repaired at Port Huron.....	St. Clair river.
Sept. 16	Str. Portage	Upper works destroyed by fire; loss estimated at \$10,000; rebuilt at Detroit	Lake Superior, at Marquette.
Sept. 17	Str. City of Glasgow.....	Sprang leak while loading; ran aground; pumped out and caulked and went on journey	Superior, Wis.
Sept. 17	Str. Harvey H. Brown.....	Ran aground on breakwater shoal; released after lightering 400 tons of her cargo	Buffalo, N. Y.
Sept. 17	Canadian cruiser Vigilant.....	Bent all blades on two propellers.....	Limekilns, Detroit river.
Sept. 17	Str. Lycoming	Collided with Str. Boyce and consort	Limekilns, Detroit river.
Sept. 17	Bge. Sweetheart	In collision with Str. Boyce and consort; leaked, ran aground, lightered and released	Limekilns, Detroit river.
Sept. 17	Bge. Buffalo	Collided with Str. Boyce and consort; ran ashore but was released, uninjured	Limekilns, Detroit river.
Sept. 17	Str. Isabella J. Boyce.....	In collision with Str. Lycoming and consort; badly damaged.....	Limekilns, Detroit river.
Sept. 17	Bge. Iron Cliff	In collision with Str. Lycoming and consort; aground; released after lightering	Limekilns, Detroit river.
Sept. 17	Str. Alaska	Ran aground; released; badly damaged; docked at Milwaukee.....	Fox Point, Lake Michigan.
Sept. 17	Str. Matthew Andrews.....	Ran aground; eleven plates damaged; docked at Superior.....	Fox Point, Lake Michigan.
Sept. 17	Str. W. B. Kerr.....	Struck bottom; ten plates damaged and sixty frames bent; docked at Superior	Sault river.
Sept. 19	Str. Majestic	Burned to water's edge and sank; total loss	Lake Erie.
Sept. 19	Str. Conestoga	Damaged by storm; drydocked at Milwaukee.....	Lake Michigan.
Sept. 21	Str. Glenmount	Struck shoal; badly damaged forward.....	Lake Superior.
Sept. 21	Str. Muney	Lost a bucket off her wheel	Lake Huron.
Sept. 21	Str. Alex. Nimick	Stranded in gale; went to pieces; total loss.....	Lake Superior.
Sept. 22	Str. Vermillion	Sprang a leak	Northport, Mich.
Sept. 23	Str. Jas. B. Colgate.....	Run into by her consort, Barge 133; struck bottom; seriously damaged; docked at Duluth	Grand Island, Lake Superior.
Sept. 23	Bge. 133	Rammed Str. Colgate which was towing her; seriously damaged; drydocked at Duluth	Grand Island, Lake Superior.
Sept. 23	Str. Majestic	Steering gear parted and she drifted for some hours in storm; not injured	Lake Superior.
Sept. 23	Str. J. L. Weeks.....	Struck bottom; several plates damaged; docked at Buffalo.....	Lake Superior.
Sept. 24	Str. E. M. Peck.....	Collided with unknown barge; docked at Milwaukee.....	St. Clair river.
Sept. 25	Str. Pendennis White	Grounded	Sandusky.
Sept. 25	Str. D. W. Mills.....	Became disabled by breaking of her shaft; towed to Cleveland.....	Kelly's Island, Lake Erie.
Sept. 25	Str. Midland Prince	Steering gear parted; No. 1 tank filled with water; temporarily repaired at the Sault.....	Sault Ste. Marie, Mich.
Sept. 26	Str. Bartow	Shipped considerable water while out in gale; cargo shifted; had to be lightered	Lake Superior.
Sept. 27	Str. Clarion	Ran aground	Mamajuda, Detroit river.
Sept. 28	Sch. Geo. W. Wescott.....	Sprang a leak and became waterlogged; was run aground to prevent sinking	Lake Michigan, near Milwaukee.
Sept. 28	Str. Edwin Holmes	Ran on breakwater shoal; released after lightering	Buffalo.
Sept. 30	Str. Australia	Collided with Str. F. B. Squire; several plates damaged and frames bent; repaired at Cleveland	St. Clair river.
Sept. 30	Bge. Polynesia	In tow of Str. Australia, which collided with Str. Squire; repaired at Cleveland	St. Clair river.
Sept. 30	Str. F. B. Squire	Collided with Str. Australia and her tow	St. Clair river.
Sept. 30	Str. Pere Marquette No. 16	Ran into city dock, doing considerable damage to it; steamer not injured	Waukegan harbor.
Sept. 30	Str. Bickerdyke	Fire; cargo considerably damaged	Kingston, Ont.
Oct. 2	Str. Amasa Stone	Ran aground; released after lightering 300 tons	Bar Point, Lake Erie.
Oct. 2	Str. Niagara	Ran aground; lightered and released Oct. 3	Niagara river.
Oct. 2	Str. Langham	Grounded; released Oct. 3 uninjured	St. Clair river.
Oct. 3	Str. City of Chicago	Broke crank shaft; out of commission for remainder of season	St. Joseph, Mich.
Oct. 3	Str. Metamora	Burned; total loss	Parry Sound, Ont.
Oct. 3	Str. Northern Wave	Trouble with steering gear; repaired at Detroit	Ballard's Reef.
Oct. 3	Str. Hoover & Mason	Ran into center pier of Northern Pacific bridge; bridge badly damaged; steamer not injured	Duluth.
Oct. 3	Str. D. G. Kerr	Ran aground; released Oct. 4	Bar Point, Lake Erie.
Oct. 4	Str. Rand	Struck north lightship at Limekilns; lightship damaged; steamer not injured	Detroit river.
Oct. 4	Str. James P. Walsh	Ran on shoal; cargo lightered	Buffalo.
Oct. 5	Tug Alpha	Hit by bridge; everything above deck destroyed	Cleveland.
Oct. 5	Str. Mary C. Elphicke	Grounded; released on the 6th after lightering 300 tons	Bar Point, Lake Erie.
Oct. 5	Tug Excelsior	Struck by Str. Presque Isle and sank	Detroit river.
Oct. 5	Str. Neosho	Tiller broke	Lake Erie.
Oct. 6	Str. Joliet	Ran on channel bank	Sandusky.
Oct. 6	Str. Sonoma	Ran hard aground; released	Bar Point, Lake Erie.
Oct. 7	Bge. Magnetic	Collided with unknown steamer; towed to Cleveland in leaking condition	Detroit river.

incurring a loss of about \$50,000.

The steamer Portage, which was partially destroyed by fire while lying at Marquette, was damaged to the extent of \$10,000. Her entire upper works were burned. Accidents caused by vessel grounding have been more numerous than any other, although eight collisions occurred and in several instances the steering apparatus of steamers was responsible for their mishaps.

LAKE LAUNCHINGS.

The steamer Verona, building for the Lackawanna Steamship Co. of Buffalo, was launched from the Lorain yard of the American Ship Building Co. on Saturday and was christened by Miss Elsie Young of Lorain. The Verona is the sixth of the eight steamers ordered by the Lackawanna Steamship Co. to be launched, and is the fourth of the Lackawanna fleet to be launched at Lorain. The ceremony was witnessed by the largest crowd that gathered at the ship yard this year.

The Verona is 500 ft. over all, 480 ft. keel, 52 ft. beam and 30 ft. deep. She will have triple-expansion engines, with cylinders 22, 35 and 58 in. diameters by 42-in. stroke, supplied with Scotch boilers, 13 ft. 9 in. by 11 ft. 6 in., equipped with Ellis & Eaves draft and allowed 180 lbs. pressure. She will be ready to go into commission within a month and will be brought out by Capt. James Jackson, and G. A. Butler will be her chief engineer.

The steamer Arthur H. Hawgood, building for the Neptune Steamship Co. of Cleveland, was launched at noon at the Bay City yard of the American Ship Building Co. last Saturday and was christened by Miss Aldyth Hawgood, the eight-year-old daughter of Mr. Arthur H. Hawgood, in whose honor the vessel is named.

The Hawgood is a 10,000-ton steamer, 569 ft. over all, 549 ft. keel, 56 ft. beam, and 31 ft. deep. She will have triple-expansion engines and Scotch boilers. Capt. H. S. Shackett will bring out the Hawgood and Alex. Wilson will be her chief engineer. The steamer will be operated by W. A. Hawgood & Co. of Cleveland, and is expected to go into commission within a month.

Capt. Alexander McMurray, one of the oldest Niagara river pilots, died last week at Bridgeburg, Ont., at the age of 80 years. Captain McMurray owned and operated boats on the Niagara river since 1845, and retired from business ten years ago.

COMMERCE OF LAKE SUPERIOR.

The commerce of Lake Superior during September was 8,532,706 tons, bringing the total commerce to Oct. 1 to 42,059,094 tons, as against 37,204,437 for the corresponding period last year. The lake commerce of 1907 will safely break all records. Summarized to Oct. 1 it is as follows:

MOVEMENT OF PRINCIPAL ITEMS OF FREIGHT TO AND FROM LAKE SUPERIOR.

Items.	To Oct. 1, 1907.	To Oct. 1, 1906.	To Oct. 1, 1905.
Coal, anthracite, net tons	1,035,790	661,873	662,804
Coal, bituminous, net tons	7,553,120	5,482,914	4,196,459
Iron ore, net tons	28,883,106	26,485,982	23,788,994
Wheat, bushels	56,153,551	38,344,415	21,407,022
Flour, barrels	3,997,965	3,967,269	2,831,279

REPORT OF FREIGHT AND PASSENGER TRAFFIC TO AND FROM LAKE SUPERIOR, FROM OPENING OF NAVIGATION TO OCT. 1 OF EACH YEAR FOR THREE YEARS PAST.

EAST BOUND.

Items.	To Oct. 1, 1907.	To Oct. 1, 1906.	To Oct. 1, 1905.
Copper, net tons	52,689	77,045	75,378
Grain, other than wheat, bushels	25,802,188	31,865,148	17,320,263
Building stone, net tons	748	4,472	7,963
Flour, barrels	3,997,724	3,958,005	2,931,279
Iron ore, net tons	28,883,106	26,485,982	23,788,994
Iron, pig, net tons	10,799	17,486	45,346
Lumber, M. ft. B. M.	507,594	670,683	687,044
Silver ore, net tons			
Wheat, bushels	56,153,551	38,344,415	21,407,022
Unclassified freight, net tons	82,180	120,341	73,333
Passengers, number	29,286	29,576	23,915

WEST BOUND.

Items.	To Oct. 1, 1907.	To Oct. 1, 1906.	To Oct. 1, 1905.
Coal, anthracite, net tons	1,035,790	661,873	662,804
Coal, bituminous, net tons	7,553,120	5,482,914	4,196,459
Flour, barrels	250	9,264	7,175
Grain, bushels	1,858	6,749	1,533
Manufactured iron, net tons	219,752	246,580	96,855
Salt, barrels	337,367	297,879	317,780
Unclassified freight, net tons	643,441	696,855	498,121
Passengers, number	29,856	29,830	26,656

SUMMARY OF TOTAL FREIGHT MOVEMENT IN TONS.

	To Oct. 1, 1907.	To Oct. 1, 1906.	To Oct. 1, 1905.
East bound freight of all kinds, net tons	32,556,664	30,069,562	26,445,515
West bound freight of all kinds, net tons	9,502,430	7,134,875	5,502,228
Total freight, net tons	42,059,094	37,204,437	31,947,743

Total number of passages to Oct. 1, 1907, was 15,100, and the registered tonnage 31,641,848.

DULUTH GRAIN SHIPMENTS.

Duluth, Oct. 9.—The receipts and shipments of grain from Duluth last week were as follows:

	Receipts.	Shipments.
Wheat	2,432,725	1,833,207
Corn	5,656	
Oats	129,312	11,885
Rye	27,266	2,428
Barley	1,012,682	451,501
Flax	184,195	78,965

IRON SITUATION.

The air is full of reports of the proposed shutting down of plants and the accompanying discharge of many workmen, but these have generally proved to be unfounded. The situation, though comparatively quiet, is not growing worse. The monthly pig iron statistics of *The Iron Trade Review* for September shows that the production, especially in steel-making iron, is holding up remarkably well. It is understood that a deadlock over the specifications for steel rails has developed between the railroad and

manufacturing interests, holding in abeyance any contemplated contracting of this sort. Pig iron continues dull, current business consisting almost entirely of small lots for prompt shipment. New business in structural is not heavy, but specifications are very active.

The Mulholland Hatch Fastener Co. of Cleveland will probably fit hatch fasteners on the steamer now building on the Clyde for the Matthews Steamship Co. of Toronto, Canada.

The steamer Muskegon of the Muskegon-Chicago Navigation Co.'s fleet will be entirely remodeled during the coming winter at a cost of \$25,000. The line will have two steamers on the Chicago route next season.

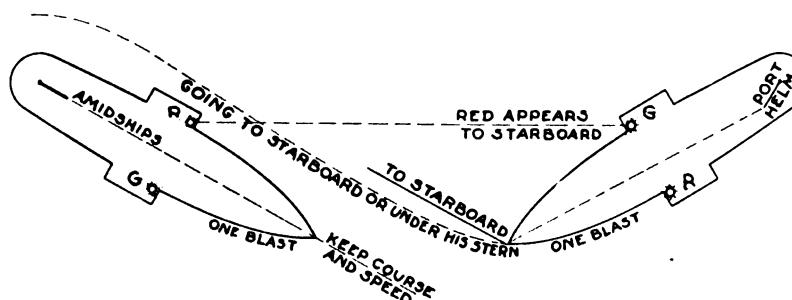
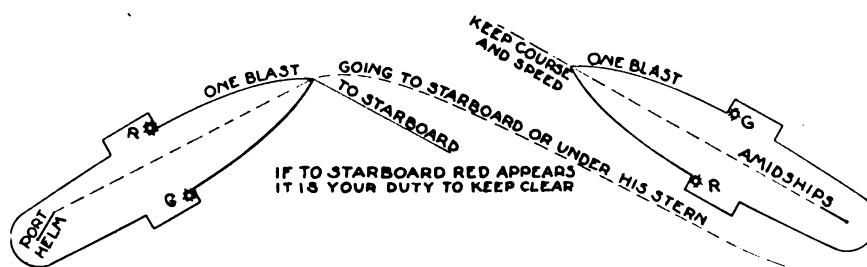
QUESTIONS FOR WHEELSMEN AND WATCHMEN.

SIXTEENTH INSTALLMENT, PUBLISHED SEPT.

12.

Following is the answer to question 167:

168. Would blow one blast of my whistle and port my helm if the light was very close; if not very close



FOURTH AND FIFTH SITUATIONS.

The foregoing illustrations are diagrams explaining graphically Rule II of Pilot Rules.

would hold course and speed. The position of the other's lights would tell me this.

169. Would hold my course, the other must keep away from me.

170. A vessel running free must keep out of the way of a vessel running closehauled. See Rule 16 (a).

171. If I were on the starboard tack would hold my course; if on the port tack would keep away.

172. The one heading north.

173. Because the one heading north has the other on her own starboard side—if to starboard red appears it is your duty to keep clear—in the night time the one heading north would see the red light of the one heading NW.

174. By porting helm.

175. Cross signals, answering one whistle with two or two for one.

176. The one in tow rings her bell; two taps being struck in quick succession, then a small interval and two more taps, making four in all, at intervals of one minute.

177. By the steamer's tow lights, which are in a vertical line on the foremast or in position equal to this.

178. By the white light on the stern of the vessel being towed.

QUESTIONS FOR WHEELSMEN AND WATCHMEN.

EIGHTEENTH INSTALLMENT.

201. On which side coming out of harbor would you leave a black buoy on?

202. What is the principle of the red and black buoys?

203. What does a red and black

off a disabled steamer lying in the trough of the sea, the seas being too heavy to launch a life-boat?

605. Supposing you wanted to send a small boat aboard another ship in a gale of wind and sea, how would you maneuver your boat preparatory to sending the boat off and how would you maneuver again in picking the small boat up on its return?

606. How would you manage a yawl boat in getting ashore through a heavy surf?

607. Which is the quickest way of stopping a steamer which is going ahead full speed?

608. What is the difference between a speed wheel and a towing wheel?

609. Which will back the better, a speed wheel or a towing wheel?

610. Why is it that a steamer will make better weather of it in a heavy sea, either running into or before it, when checked down than when running full speed or nearly so?

611. In ordinary weather how would you pick up a man fallen overboard outside and under full speed?

612. When is there the most strain on the rudder going ahead, when the tiller is to starboard or to port?

A FEW TIPS ABOUT THE RULES OF THE ROAD.

Designed to help the apprentice and subordinate officer aboard ship.

RULES FOR STEAM VESSELS.

RED LIGHT TO STARBOARD.

Keep clear of all red lights on starboard side. (Rule II and Fourth and Fifth Situations; also Rule XXI.)

If two or three on the bow, alter your course to starboard.

If five or six points on the bow, take a bearing and watch how it alters; if the light is closing slowly and keeping on the same bearing, slacken speed, and let the light pass ahead; if the light is closing in and slowly drawing astern, alter your course to port and keep your speed; if the light is closing in and slowly drawing ahead, slacken speed, and let the light pass ahead. Or, remember it in rhyme:

If to starboard red appear,
'Tis your duty to keep clear;
Act as judgement says is proper—
Port or starboard, back or stop her.

GREEN LIGHT ON PORT SIDE.

Hold your course for all green lights on port side (Rule II and Fourth and Fifth Situations). The green lights have to keep clear; but if the green light is so close that collision cannot be avoided by the action of the vessel which is to keep clear, you will have to take such action as will best aid to avert collision. (Rule 27.)

QUESTIONS FOR MASTERS AND MATES.—NO. 44.

602. Which way will a steamboat turn round the fastest having a right-handed propeller?

603. If you were bucking a heavy sea and it became necessary to square away before it, on which helm would you come round on and when?

604. How would you take the crew

ON OUR QUARTER-DECK

Where the Marine Review With Its Friends and Patrons Get Together and Talk It Over

It may not be out of place to mention the fact that "our quarter-deck" is very much unlike the quarter-deck of the olden time, where only the "Old Man" trod and ruled with the iron hand of dignity and discipline. Those were strenuous times compared with present day standards, but that they were necessary then, is only too evident. On our quarter-deck you may say just what you think without running the risk of being knocked down with a belaying-pin or being keelhauled. This department can be made very interesting with a little help from our readers. If you have anything of interest, or of interest to friends, send it in. Offer suggestions; tell what you like and what you dislike. It is our desire to please you.

The following valuable contribution offering a possible solution of the problem of aerial echoes is received with thanks from the MARINE REVIEW, and that it will be read with interest goes without saying. It is particularly valuable coming as it does from so high and reliable an authority as Mr. Anderson, whose experience in such matters makes him well informed on the subject.

To the Editor:

I step upon your quarter-deck to add my little yarn to the discussion of sound reflection. The experience of Mr. Turner is by no means unique. Echoes from overhead or from seaward are matters of everyday experience with engineers who are accustomed to experimenting with fog signals, and the cause of them is fairly well understood. Normally, sound radiates in all directions from the source by wave motion propelled in straight lines exactly as rays of light radiate. It is well known that when rays of light pass from a medium of one density to a medium of another density, as from air to water, or from air to glass, they are refracted or bent. The same is true when they pass from air of one density to air of another density. Sailors recognize this in correcting for refraction whenever they make an observation of the sun or a star.

Sound waves are similarly deflected, but because we cannot see the deflection we find it very much harder to realize the action. If light waves or sound waves hit a solid body they are reflected from it, the angle of reflection being equal to the angle of incidence. This, of course, is a well known primary law in physics. Now, if we try to follow the action of sound waves in air we can readily realize that they are constantly passing from air of one density to air of another density. Wherever air is

found in patches differing in heat it will also differ in density. It is not supposed that any difference in density can be sufficient to give complete reflection, but a state of things can be imagined where quite a sharp bending will occur, and if you can imagine this bending continued through a semicircle you will have exactly the same effect as you would have from complete reflection. This is undoubtedly what occurs in the case of aerial echoes returned either from the horizon or from the zenith, as often happens.

I am afraid your editorial theory that the sound waves increase in size with distance is not supported by scientific investigation.

Yours sincerely,
W. M. P. ANDERSON,
Chief Engineer.

THE NEW CHART OF THE LAKES.

The United States Lake Survey Office is to be commended for issuing the new general chart of the chain of lakes on one sheet showing the equal lines of variation of the compass. Such a chart has long been needed so that its advent fills a long-felt want. Every boat on the lakes should have one of these charts, if, for no other reason than the information given on it regarding this important correction of the compass. While the lines showing the variation of the compass is the most important feature of the chart there are numerous other data of interest to all navigators.

If the Lake Survey Office would only add a latitude and longitude scale with minute divisions instead of five-minute divisions to its navigating charts of the lakes these charts would be as near perfection as perfection is possible. A minute scale is essential for so many navigators set their courses by the pelorus and azimuths. To do this the ship's position for longitude must be known within a few minutes. The MARINE REVIEW would very much like to see this matter given the consideration it merits.

The Saratoga, which was recently condemned by the Navy Department, is a wooden sailing ship 147 ft. long, 36 ft. beam, with a displacement of 1,025 tons. She was built in 1842.

QUESTIONS AND ANSWERS.

Editor of Question Department:—Will you kindly give me a short definition of a Manifest, Supplementary Manifest, Charter Party, Vessel's License and Enrollment, Protest, Bill of Lading, etc., as used in navigation?

A MATE.

Duluth, Minn.

Manifest.—A document signed by the master and submitted to the customs officer, showing to which port the cargo is destined; it contains the name of the boat, her hauling port, master's name, net tonnage, port sailed from and port bound to. Following this is an itemized account and description of the cargo, the port of loading, by whom shipped and to whom consigned. The master must sign the manifest in the presence of the customs officer. A manifest is nothing more than a duplicate of the clearance. The master takes the clearance with him and the manifest is left with the customs officer as a record. A clearance taken from one customs office must be delivered to another by the master.

Supplementary Manifest.—As its name implies it is a part of a manifest, or supplement thereto. It is for the purpose of keeping a record of the business done at way ports. The manifest shows the business done merely at the port of departure and the port of destination. Before this supplementary manifest came into vogue, which is only several years now, a boat clearing from, say Chicago bound to Buffalo, could stop at way ports and either discharge or take on cargo, or both, without making any report of same, so that only the ports of departure and destination got credit. Under this new ruling every bit of cargo either taken on or discharged at intermediate ports must be itemized and set down in the supplementary manifest together with the name of the intermediate port, and the date of sailing from the original port. It is also necessary to itemize the fuel taken on in this supplementary manifest, whether it be an intermediate port or the original port. It is necessary to file a supplementary port with the customs office whether you stopped at an intermediate port or not, also if you took no fuel either at the original port or an intermediate port. The master must fill out his own supplementary manifest. The government furnishes them gratis. The master must also make out his own clearance and manifest if he furnishes his own blank forms, but if the customs house furnish them he

must pay for them and the customs officer must fill them in.

Charter Party.—A written contract entered into by any person and a ship owner (or the master of the ship), for the hire of his ship for a specified time or voyage. The owner contracts to supply a stout ship properly supplied with the necessary stores and provisions and properly officered and manned. The party doing the chartering contracts to supply cargo and pay certain freight for the use of the ship, or otherwise, depending on the conditions of the contract.

Vessel's License.—A document issued by the customs house giving a vessel permission to engage in trade on specified waters. The license bears a number and contains the name of the ship, hauling port, name of the captain and managing owner, tonnage, port of registry, number of the enrollment, etc. A vessel's license is good for one year from the date of issue and at the expiration of this time application must be made at the local customs office for renewal of same. The license must at all times be aboard the ship. There are no customs' fees connected with the issuance of a license or enrollment.

Enrollment.—A document similar to a license, only that it contains a detailed description of the ship, where built and the material built of, by whom built, etc. The enrollment remains the same until the ship is either sold or converted into a different kind of craft. The enrollment must always be on board the ship to which it belongs. Neither the license nor enrollment are posted on board but are kept in the master's room.

Protest.—It is the master and crews' sworn statement of the particular events of the voyage, explaining in full detail all the actual or anticipated loss or damage to vessel or cargo. The protest should be noted within 24 hours after arriving in port. It may be extended within six months from the date of noting.

Bill of Lading.—A stamped receipt for cargo received on board the ship, signed by the master, owner or agent of the boat, in which the master binds himself and vessel under certain exceptions to deliver the cargo at the port of destination in like good order and condition as he received them, the consignee paying freight on receipt of the same.

Traverse Tables can be used for other bearings besides this one.

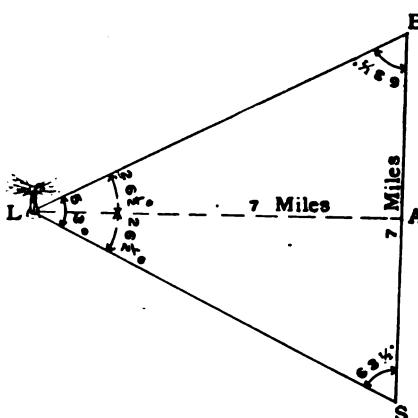


FIG. 6.

The Bearing $26\frac{1}{4}^{\circ}$ before the beam and $26\frac{1}{4}^{\circ}$ abeam. The distance run between bearings equals the distance off when the ship was abeam of the object.

HOW TO DETECT A CURRENT.

To detect a current, leeway, etc., when permissible, continue to take cross-bearings at short intervals on the same course, and plot them on the chart, and if where the lines cross each other they intersect with the line representing the course, then the vessel is making good the course steered. If the intersection of the cross-bearing comes inside of the course the vessel is supposed to be making good, a course in that direction from the position last found will show the direction the ship is moving over the ground. All of which is explained in Fig. 7.

OTHER METHODS WILL SHOW IT.

To determine whether the ship is being influenced by current, leeway, deviation, local attraction, bad steering, etc., recourse can be had to other methods as well as by the cross-bearing. Lay the course on the chart just as you desire to steer it, or the course you are supposed to be making good; then at frequent intervals take bearings according to the methods already described, and plot their positions on the chart as fast as you take them and the manner in which they cut the course will tell you which way your vessel is working whether in or out. If the lines of bearing coincide with the course, then the vessel is making good her course. If they do not, then the ship is being influenced and whatever is the cause of this influence will be readily detected by the navigator who holds the key to the situation. If he has been careful and applied the right amount of Var. and Dev. to the course he knows that this cannot be the trouble; if there is no wind it cannot be from leeway; he has watched the steering and he knows that that is all right. It must be

THE THEORY AND PRACTICE OF LAKE NAVIGATION

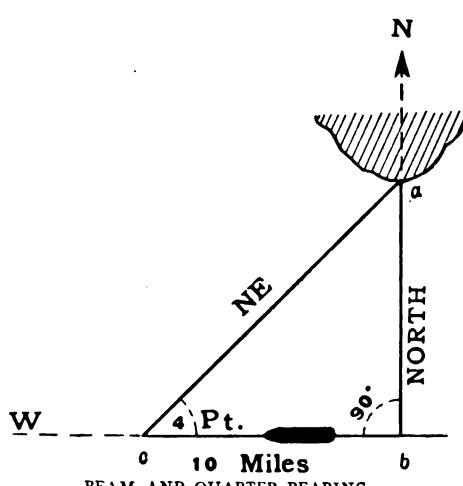
BY CLARENCE E. LONG

POSITION FINDING CONTINUED.

This special department is conducted for the advancement and betterment of the lake mariner in his various stations aboard ship. Lake and coast navigation being similar, this course of instruction is applicable to both, and the foundation for deep-water navigation; hence, every sailor, no matter whether he be a fresh or salt water man, should be interested in this department. A careful study of this department will give you many hints to help along your practice. The policy of this department is to make its instructions as thoroughly practicable as possible.

This is the same thing as the 4-

point bearing inverted. Take the bearing of an object when it is at right angles to your course, or directly abeam and continue course until the object has changed its bearing 4 points, or to NE, the ship must run from *b* to *c*, a distance of 10 miles, hence, the distance from *b* to *c* is the same as from *b* to *a*, that is, 10 miles. The Traverse Tables afford a ready means of solving such problems by mere inspection. Look under angle of 4 points and in either the latitude or departure column find 10, or the nearest you can get to it (9.9 in the table) and opposite in the distance column will be found the number of miles you are from the light at second bearing (14 miles in this case). The



either from local attraction or current, or probably from both. But he knows, or should know, in which localities the former is found, and he judges accordingly, so that he can safely assume whether it is one or the other, or both. In any case he knows, whatever the cause, the direction in which it is carrying him and he can alter the course accordingly.

EXAMPLES ON BEARINGS.

1. You are steering N by E $\frac{1}{4}$ E at the rate of 11 $\frac{1}{4}$ miles per hour, and at 9:30 Twin River Pt. Lighthouse bears by compass NNW $\frac{3}{4}$ W and at 9:47 the same lighthouse bears

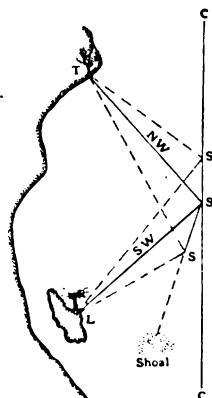


FIG. 7.

NNW $\frac{3}{4}$ W. How far and in which direction are you from the lighthouse? What kind of a bearing is this?

2. You are steering W $\frac{1}{4}$ S at the rate of 12 $\frac{1}{4}$ miles per hour; at 10:02 Beaver Island lighthouse bears NW $\frac{1}{4}$ W and at 10:21 the same lighthouse bears N $\frac{1}{4}$ W. How far and in which direction are you from the lighthouse?

3. You are steering N $\frac{1}{2}$ E at the rate of 9 $\frac{1}{2}$ miles per hour; at 7:41 Pt. Betsey bears NE by N and at 7:56 the same light bears NE by E $\frac{1}{2}$ E. How far and in which direction are you from the light? What kind of a bearing is this?

4. You are steering N $\frac{1}{2}$ E at the rate of 9 $\frac{3}{4}$ miles per hour, and at 8:17 Milwaukee North Pt. light bears NW $\frac{1}{2}$ W and at 8:40 the same light bears WSW $\frac{1}{2}$ W. How far are you from the light and in which direction? What kind of a bearing is this?

5. You are steering North at the rate of 11 miles an hour and at 1:15 Twin River Pt. lighthouse bears NNW and at 1:48 the same lighthouse bears NW. How far and in what direction are you from the light? By continuing the same course north how far would you be off the light when abeam? What kind of a bearing do you call this?

6. You are steering N $\frac{1}{2}$ W at the rate of 8 miles an hour, and at 9:20 Big Pt. Sable bears NNE $\frac{1}{2}$ E and at 9:41 the same light bears NE by E $\frac{1}{2}$ E. How far have you run and in which direction are you from the light? What kind of a bearing is this?

7. You are steering S by E at the rate of 12 knots and at 2:01 Sturgeon Bay Ship Canal lighthouse bears abeam, or W by S, and at 2:17 the same light bears NW by W. How far were you off the light when you had it abeam?

8. Pilot Island light bears N by W $\frac{1}{2}$ W and at the same moment Cana Island light bears WSW. Where are you and what would be the correct magnetic course from your position to a point 2 miles south of Poverty Island lighthouse? Supposing the Dev. on that course is 9° westerly, what would the compass course be?

9. If your boat makes 11 $\frac{3}{4}$ miles per hour, how long does it take her to make a mile at the same speed?

10. Find out how long it takes to run a mile in each of the following cases: 12 $\frac{1}{4}$ miles per hour; 12 $\frac{1}{2}$ miles; 9 miles; 9 $\frac{1}{2}$ miles; 11 $\frac{1}{4}$ miles; 10 $\frac{1}{4}$ miles; 13 $\frac{1}{4}$ miles; 8 $\frac{3}{4}$ miles.

11. If it takes your boat an hour and 53 minutes to make 25 miles, how fast are you running per hour?

12. If it takes you 6 hours 33 minutes to run 74 $\frac{1}{2}$ miles, what speed are you making.

13. You are steering SW $\frac{1}{2}$ W at the rate of 10 $\frac{1}{4}$ miles per hour. At 6:04 Pt. Betsey lighthouse bears S $\frac{1}{4}$ W and at 6:30 the same lighthouse bears E by S. How far are you from the lighthouse? What would be the correct magnetic course from there to Milwaukee? Supposing the Dev. is 8° Wly, what is the compass course to Milwaukee? What kind of a bearing do you call this?

14. The lighthouse on South Manitou Island bears W by N and at the same moment the lighthouse on North Manitou Island bears N $\frac{1}{2}$ W. Where are you?

15. Cana Island light bears SW $\frac{1}{2}$ W and at the same moment Pilot Island light bears NNW. Where are you and what course would you steer to a point 3 miles south of Poverty Island light?

16. Manitowoc pierhead light bears W $\frac{1}{4}$ S and Twin River Pt. lighthouse N by W, how far are you from Sheboygan North Pt., and how should it bear from you? What would be the true course from point of position to Manistee piers? What kind of a bearing is this?

17. You are steering S by E and

at 10:05 Manitowoc pier light bears abeam, and at 11:50 Sheboygan North Pt. light bears abeam. What time is your boat making per hour; the distance between lights being 23 statute miles? How many knots is she making per hour, and what should a log registering nautical miles show between the two places? Supposing that the log registered too many miles, what is the trouble with the log; supposing it did not indicate enough miles, what is the trouble, and how would you remedy it? Also, what was the bearing by compass of Manitowoc light when you are abreast, and what is the relative bearing of Sheboygan light when abreast?

18. At 10 $\frac{1}{2}$ miles per hour how long will it take your boat to run from Chicago to Pt. Betsey? What should a log registering nautical miles show on this run?

19. If it takes you 7 hours to run from Manitowoc to Pt. Betsey, a distance of 74 miles, how long should it take you to run from North Manitou Island light to Greys Reef lightship, a distance of 65 miles?

20. If it takes you 8 hrs. 23 min. to run 93 statute miles, how long had it ought to take you to run 53 nautical miles?

21. You are making 11 $\frac{1}{2}$ miles an hour going up the west shore. It has just cleared up when Twin River Pt. lighthouse bears 2 $\frac{3}{4}$ pts. before the beam, the time is 3:10 and at 3:33 the same lighthouse bears 2 $\frac{1}{2}$ pts. abaft the beam. How far were you from the light when you passed it?

22. A steamer making 18 knots makes how many feet in 1 minute, and how many feet in 3 seconds? How many fathoms in a nautical mile?

23. You are bound down the west shore of the lake in a heavy NW wind, and you figure on taking the north passage to the Straits after you get down to Wiggins Reef gas buoy. You are 1 $\frac{1}{2}$ miles off Whitefish Pt. Shoal buoy when you pass it, and you want to shape a course that will head you on to Fisherman Shoal gas buoy. The true course is NNE $\frac{1}{2}$ E, Var. $\frac{1}{8}$ -pt. Ely, and the Dev. $\frac{3}{8}$ -pt. Ely, and you figure that you are making $\frac{1}{4}$ -pt. leeway and you hold her up that much on the course. What is the compass course to be steered to make the desired true course of NNE $\frac{1}{2}$ E. Your boat is making 11 $\frac{1}{2}$ statute miles per hour, and according to the course you should be 3 miles off Cana Island when abreast of it. It is 17 miles from Whitefish Pt. to Cana Island. As you go along on the course you

take a 4-pt. bearing of Cana Island lighthouse to verify your position; at 10:30 Cana Island light bears 4 points from the course and at 10:41 it bears abeam. How far are you off the light? Evidently you allowed too much for leeway, or your compass is a little off, or may be the wheelsman let her work up too much; but at any rate you are in too much on the course to fetch right. The distance from abreast Cana Island to a point 4 miles (the distance you should be off Pilot Island when abreast) abreast of Pilot Island on this course is 15 miles, how much will you have to alter your course from the distance you found you were off Cana Island to fetch you the 4 miles off Pilot Island? When Pilot Island bears 4 points from the course it is 11:40 and at 12:01 it bears abeam. How far are you from Pilot Island? What is the first bearing by compass of the 4 point bearing you took of Pilot Island and what is the second bearing by compass? From this last position it is just 8 miles to Fisherman Shoal and the course you are steering brings you right on to the shoal. You wish to pass 1½ miles outside of the buoy, how much will you have to alter your course in order to do it? From Fisherman Shoal you wish to steer a course right through to Pt. aux Barques leaving it on your port beam at a distance of 4 miles. The true course is NE ¾ N, no Var., Dev. ½-pt. Ely, and leeway ½-pt., what is the course to be steered by compass? You should be 4¾ miles off Poverty Island light when it bears abeam. How could you tell how far you were off? At 3:25 Pt. aux Barques bore N 58° E and at 3:56 it again bore N by W 38° W. How far are you from Ft. aux Barques, and in which direction, and how far will it be from you when abreast?

SEPTEMBER LAKE LEVELS.

The United States Lake Survey at Detroit reports the stages of the great lakes for the month of September, as follows:

Lakes.	Feet above tide water New York.
Superior	603.13
Michigan-Huron	581.39
Eric	572.77
Ontario	246.52

During the past month all of the lakes have lowered except Lake Superior, which made an unusual rise for this time of year.

During October, Lake Superior should hold its present level; all the other lakes should fall somewhat as follows: Lakes Michigan and Huron 2½ in., Lake Erie 3½ in., Lake Ontario 4½ in. It must be understood

that these are averages, and an unusually wet October would check this, and a very dry October might cause greater lowering.

During September, Lake Superior rose 2½ in. and is practically at the average September stage of the past ten years. It is 2¼ in. higher than last year, and 6½ in. higher than in 1890, but 2½ in. lower than in 1905, and 8½ in. lower than in 1876.

Lakes Michigan and Huron fell ¾ of an inch during the month, but are still 6½ in. above the average September stage of the past ten years, 3½ in. higher than last year, 7 in. higher than in 1895, but half an inch lower than in 1905, and 2 ft. lower than in September, 1876.

Lake Erie fell 3 in. during the month, but is still over 6 in. above the average September stage of the past ten years, 5 in. higher than last year, a foot and a half higher than in 1895, but an inch lower than in 1904, ½ in. lower than in 1890 and 14 in. lower than in 1876.

Lake Ontario fell 4 in. during the month. It is, however, 8½ in. above the average September stage of the past ten years, half a foot higher than last year, and 2½ ft. above the stage of September, 1895, but 4¾ in. below that of 1905, and 10 in. below the water of 1876.

BIDS FOR NAVAL SUPPLIES.

Bids received at the Bureau of Supplies and Accounts, Navy Department, for material and supplies for the navy yards, opened Sept. 24, contained the following:

Schedule 265—Ordnance.	
Class J	Constructing Tow Ferry Slips at Torpedo Station, Newport.
Darling & Slade, Fall River, Mass.	\$ 7,470.00
R. Rolf, 39 Cortlandt St., New York	10,333.00
R. H. Beattie, Fall River, Mass.	7,071.00
Schuldt's 287—Yards and Docks.	
Class 44—Pensacola—Two Centrifugal Pumps.	
D'Oliver Engineering Co., 121 S. 11th St., Philadelphia, Pa.	\$650.00
Motley, Green & Co., 66 Broad St., New York	700.00
	860.00
Vermilye & Power, 17 Battery Pl., New York	291.00
Henry H. Worthington, 114 Liberty St., New York	622.00
Central Metal & Supply Co., 609 E. Lombard St., Baltimore, Md.	226.00
Class 45—Pensacola—Nine Valves.	
Bridgeman Bros. Co., 1426 Washington Ave., Philadelphia, Pa.	\$337.00
James B. Clow & Son, 342 Franklin St., Chicago, Ill.	252.00
M. J. Drummond & Co., 182 Broadway, New York	196.50
Fevold Equipment Co., Pittsburgh, Pa.	382.75
Fairbanks Co., New Orleans, La.	181.75
Manning, Maxwell & Moore, 85 Liberty St., New York	232.20
Central Metal & Supply Co., 609 E. Lombard St., Baltimore, Md.	548.00
	Schedule 297—Equipment.
Class 79—Boston—Four Life Buoys.	
Armstrong Cork Co., Pittsburgh, Pa.	\$24.00
Frye-Phipps Co., 25 Pearl St., Boston, Mass.	28.48
David Kahnweiler & Son, 2 Dover St., New York	30.00
Class 81—Boston—Two Boat Stoves.	
Joseph N. Early, 127 Reade St., New York	\$ 55.00
Fairbanks Co., Boston, Mass.	123.00
Class 132—Washington—About 900 lbs. Garlock Packing.	
Crandall Packing Co., 136 Liberty St.,	

New York	\$721.60
Double Service Packing Co., 430 Walnut St., Philadelphia, Pa.	563.75
J. Edw. Ogden Co., 147 Cedar St., New York	902.00
Class 133—Washington—800 ft. Rubber Hose.	
Gutta Percha & Rubber Mfg. Co., 126 Duane St., New York	\$255.00
James B. Lambie Co., Washington, D. C.	276.00
Manning, Maxwell & Moore, 85 Liberty St., New York	246.40
Class 134—Washington—200 lbs. Hydraulic Leather.	
Henry Frank, 40 Spruce St., New York	\$81.00
E. F. Houghton Co., 240 W. Somerset St., Philadelphia, Pa.	300.00
Michigan Leather Co., Detroit, Mich.	70.00
Class 136—Newport—11 Bronze Globe Valves.	
Bridgeman Bros. Co., 1426 Washington Ave., Philadelphia, Pa.	\$342.00
Fairbanks Co., Boston, Mass.	741.00
R. W. Geldart, 2 Stone St., New York	382.00
Hartman Co., 1235 N. Front St., Philadelphia, Pa.	473.20
Junkheimer Co., Cincinnati, O.	460.00
Manhattan Supply Co., 127 Franklin St., New York	529.00
William Powell Co., Cincinnati, O.	423.02
Central Metal & Supply Co., 609 E. Lombard St., Baltimore, Md.	694.00
Schedule 301—Steam Engineering.	
Class 151—Brooklyn—10,835 lbs. Brass Tubes.	
American Tube Works, 95 Broad St., Boston, Mass.	\$2,204.92
Bridgeport Brass Co., 99 John St., New York	2,351.19
Benedict & Burnham Mfg. Co., 99 John St., New York	2,275.35
National Brass & Copper Tube Co., 41 Park Row, New York	2,204.92
Central Metal & Supply Co., 609 E. Lombard St., Baltimore, Md.	2,383.70
Rome Brass & Copper Co., Rome, N. Y.	2,214.67
Class 152—Brooklyn—About 3,300 lbs. Seamless Drawn Copper Tubing.	
Central Metal & Supply Co., 609 E. Lombard St., Baltimore, Md.	\$1,058.11
Class 153—Brooklyn—14 Brass Safety Valves.	
American Steam Gage & Valve Mfr. Co., 108 Camden St., Boston, Mass.	\$120.96
Ashton Valve Co., 271 Franklin St., Boston, Mass.	121.80
Knox & Bro., 96 John St., New York	217.00
Junkheimer Co., Cincinnati, O.	153.30
Manhattan Supply Co., 127 Franklin St., New York	135.10
Vermilye & Power, 17 Battery Pl., New York	175.14
Central Metal & Supply Co., 609 E. Lombard St., Baltimore, Md.	133.00
Class 154—Brooklyn—28 Brass Gages.	
American Steam Gage & Valve Co., 108 Camden St., Boston, Mass.	\$116.06
Ashton Valve Co., 271 Franklin St., Boston, Mass.	104.44
R. W. Geldart, 2 Stone St., New York	78.40
Knox & Bro., 96 John St., New York	105.00
James P. Marsh & Co., 284 Washington St., Chicago, Ill.	80.50
Manning, Maxwell & Moore, 85 Liberty St., New York	109.20
Manhattan Supply Co., 127 Franklin St., New York	94.50
J. B. Roache, 350 Fulton St., Brooklyn, N. Y.	81.64
Charles L. Tagliabue Mfg. Co., 153 Fulton St., New York	78.40
Vermilye & Power, 17 Battery Pl., New York	88.20
Central Metal & Supply Co., 609 E. Lombard St., Baltimore, Md.	133.00
Class 155—Brooklyn—14 Sets Heavy Brass Fittings for Water Gage Glasses.	
Ashton Valve Co., 271 Franklin St., Boston, Mass.	\$84.00
Jerguson Mfg. Co., 221 Columbus St., Boston, Mass.	83.16
Junkheimer Co., Cincinnati, O.	27.30
Manhattan Supply Co., 127 Franklin St., New York	21.00
Central Metal & Supply Co., 609 E. Lombard St., Baltimore, Md.	28.00
Class 157—Brooklyn—14 Open Bucket Steam Traps.	
R. W. Geldart, 2 Stone St., New York	\$330.00
Kiley & Muller, 34 W. 13th St., New York	316.00
Montgomery & Co., 105 Fulton St., New York	330.00
Manhattan Supply Co., 127 Franklin St., New York	359.20
Class 158—Brooklyn—14 Brass Reducing Valves.	
R. W. Geldart, 2 Stone St., New York	\$458.00
Umley Dodson Co., Norfolk, Va.	707.18
Montgomery & Co., 105 Fulton St., New York	460.40
Manning, Maxwell & Moore, 85 Liberty St., New York	763.84

Manhattan Supply Co., 127 Franklin St., New York	765.60	Excelsior Equipment Co., Pittsburgh, Pa. 184.00	Independent Pneumatic Tool Co., First Nat. Bank bldg., Chicago	104.00	Baltimore, Md.	367.50
Sherman, Brown, Clements Co., 78 Murray St., New York	468.00	Ingersoll-Rand Co., 11 Broadway, New York	150.00	Thomas Kells Sons Co., 240 India St., Brooklyn, N. Y.	362.50	
Vermilye & Power, 17 Battery Pl., New York	743.78	Standard Railway Equipment Co., 90 West St., New York	140.00	Charles A. Reagen, foot of Chestnut St., Philadelphia, Pa.	350.00	
Central Metal & Supply Co., 609 E. Lombard St., Baltimore, Md.	745.00	Class 4—One Pneumatic Riveter.		Watson & Pittinger, 420 Carroll St., Brooklyn, N. Y.	345.00	
Schedule 307—Supplies and Accounts.		Chester B. Albee Iron Works Co., 1115 Market St., Allegheny, Pa.	\$1,453.00	George R. Johnson, Baltimore, Md.	342.50	
Class 239—League Island—100 sq. yds. Sheet Gum.			2,618.00	Class 189—New York—Large Number of White Oak Knees.		
James Boyd & Bro., 14 N. 4th St., Philadelphia, Pa.	\$880.00	Excelsior Equipment Co., Pittsburgh, Pa. 845.00	Class 5—One Yoke Riveter.	G. Elias & Bro., 965 Elk St., Buffalo, N. Y.	\$6,700.00	
Diamond Rubber Co., 1076 Broadway, New York	495.00	Chicago Pneumatic Tool Co., 95 Liberty St., New York	\$250.00	W. D. Gill & Son, 701 President St., Baltimore, Md.	4,852.50	
S. R. Fletcher, 26 Cortlandt St., New York	543.00	Excelsior Equipment Co., Pittsburgh, Pa. 688.00	Class 7—One Pneumatic Geared Hoist.	George R. Johnson, Baltimore, Md.	4,808.50	
Mallinson & Crossman, 23 Warren St., New York	545.00	Ingersoll-Rand Co., 11 Broadway, New York	150.00	Charles A. Reagen, foot of Chestnut St., Philadelphia, Pa.	3,235.00	
Osgood Sayen, Arcade bldg., Philadelphia, Pa.	550.00	Class 23—One Pneumatic Riveter.		Stokes Bros. Co., 30th below Chestnut St., Philadelphia, Pa.	5,581.50	
Clement Restein, 103 N. 2d St., Philadelphia, Pa.	490.00	Chicago Pneumatic Tool Co., 95 Liberty St., New York	\$450.00	Watson & Pittinger, 420 Carroll St., Brooklyn, N. Y.	4,022.50	
Gutta Percha & Rubber Mfg. Co., 126 Duane St., New York	584.00	Excelsior Equipment Co., Pittsburgh, Pa. 499.00	Class 211—New York—665 lbs. Flax Packing.	Class 211—New York—665 lbs. Flax Packing.		
Class 241—Annapolis—400 lbs. Power Plant Packing.		Fox Bros. Co., 126 Lafayette St., New York	404.00	R. W. Geldart, 2 Stone St., New York	124.02	
A. W. Chesterton & Co., 64 India St., Boston, Mass.	\$180.00	Pilling Air Engine Co., Detroit, Mich.	385.00	Manhattan Supply Co., 127 Franklin St., New York	134.20	
Fairbanks Co., Baltimore, Md.	264.00	F. T. Witte Hardware Co., 106 Chambers St., New York	500.00	Manning, Maxwell & Moore, 85 Liberty St., New York	118.73	
H. W. Johns-Manville Co., 100 William St., New York	200.00	Class 23—500 Boiler Tubes.		Sninney, Wise & Co., Lynn, Mass.	202.50	
Larkins Metallic Packing Co., Lewis bldg., Pittsburgh, Pa.	300.00	Central Metal & Supply Co., 609 E. Lombard St., Baltimore, Md.	\$1,325.00	Class 229—New York—1,000 lbs. Black Marine Glue.		
R. Levick Sons & Co., 721 Chestnut St., Philadelphia, Pa.	280.00	Excelsior Equipment Co., Pittsburgh, Pa.	940.89	William Wirt Clark & Son, 546 Monument St., Baltimore, Md.	\$127.50	
Mechanical Rubber Co., Cleveland, O.	300.00	Fox Bros. & Co., 126 Lafayette St., New York	761.54	Abram L. Hirsch, 368 Greenwich St., New York	174.50	
Manning, Maxwell & Moore, 85 Liberty St., New York	172.80	E. F. Keating, 452 Water St., New York	687.35	Simon & Elting, 194 Front St., New York	150.00	
Double Service Packing Co., 430 Walnut St., Philadelphia, Pa.	240.00	Handlan-Buck Mfg. Co., St. Louis, Mo.	993.75	Old Dominion Paper Co., Norfolk, Va.	127.00	
W. G. Stevenson, 110 Race St., Philadelphia, Pa.	260.00	F. T. Witte Hardware Co., 106 Chambers St., New York	715.50	Class 237—New York—Large Quantity Copper Tubing.		
William R. Thompson, 704 Lafayette Ave., Brooklyn, N. Y.	260.00	Class 23—500 Brass Condenser Tubes.		American Tube Works, 95 Broad St., Boston, Mass.	\$1,886.31	
Class 242—Annapolis—75 sq. yds. Packing.		Excelsior Equipment Co., Pittsburgh, Pa.	32c. per lb.	Benedict & Burnham Mfg. Co., 99 John St., New York	1,968.85	
Fairbanks Co., Baltimore, Md.	\$312.00	Fox Bros. & Co., 126 Lafayette St., New York	\$506.52	Bridgeport Brass Co., 255 Broadway, New York	1,932.84	
H. W. Johns-Manville Co., 100 William St., New York	350.00	G. & W. Mfg. Co., 26 Cortlandt St., New York	627.43	Excelsior Equipment Co., Pittsburgh, Pa.	2,120.50	
Double Service Packing Co., 430 Walnut St., Philadelphia, Pa.	274.00	Class 25—16 Gross Water Gage Glasses.		Merchant & Evans Co., 517 Arch St., Philadelphia, Pa.	2,039.00	
Thomas Summerville Co., Washington, D. C.	384.25	L. Barth & Son, 30 Cooper Sq., New York	\$105.48	Central Metal & Supply Co., 609 E. Lombard St., Baltimore, Md.	2,031.00	
Class 243—Annapolis—75 sq. yds. Rainbow Packing.		Excelsior Equipment Co., Pittsburgh, Pa.	100.90	National Brass & Copper Tube Co., 41 Park Row, New York	1,886.31	
James Boyd & Bro., 14 N. Fourth St., Philadelphia, Pa.	\$294.00	G. & W. Mfg. Co., 26 Cortlandt St., New York	91.68	Rome Brass & Copper Co., Rome, N. Y.	2,039.00	
Diamond Rubber Co., 1076 Broadway, New York	245.00	Class 24—500 Brass Condenser Tubes.		Class 239—New York—54 Brass Cocks.		
Fairbanks Co., Baltimore, Md.	330.00	Fox Bros. & Co., 126 Lafayette St., New York	93.50	Jerguson Mfg. Co., 221 Columbus Ave., Boston, Mass.	\$261.36	
Gutta Percha & Rubber Mfg. Co., 126 Duane St., New York	280.50	II. A. Rogers Co., 19 John St., New York	84.17	A. B. Sands & Son Co., 20 Vesey St., New York	51.00	
H. W. Johns-Manville Co., 100 William St., New York	265.00	Schedule 252—Equipment.		Central Metal & Supply Co., 609 E. Lombard St., Baltimore, Md.	198.60	
R. Levick Sons & Co., 721 Chestnut St., Philadelphia, Pa.	353.50	Class 24—Puget Sound—1,640 lbs. Seamless Drawn Brass Tubing.		Class 242—New York—50 Hose Valves.		
Mechanical Rubber Co., Cleveland, O.	300.00	American Tube Works, 95 Broad St., New York	\$348.99	Chapman Valve Mfg. Co., Indian Orchard, Mass.	\$638.50	
Manning, Maxwell & Moore, 85 Liberty St., New York	272.75	Berry & Aikens, 36th and Wharton Sts., Philadelphia, Pa.	459.20	Kennedy Valve Mfg. Co., 57 Beckman St., New York	197.50	
Double Service Packing Co., 430 Walnut St., Philadelphia, Pa.	222.00	Benedict & Burnham Mfg. Co., 99 John St., New York	375.56	Lunkenheimer Co., Cincinnati, O.	575.00	
Peerless Rubber Mfg. Co., 16 Warren St., New York	350.00	Class 24—500 Brass Condenser Tubes.		A. B. Sands & Son Co., 20 Vesey St., New York	740.00	
Thomas Sommerville Co., Washington, D. C.	335.00	Fox Bros. & Co., 126 Lafayette St., New York	348.99	Class 246—New York—297 Oars.		
W. G. Stevenson, 110 Race St., Philadelphia, Pa.	210.00	Pacific Hardware & Steel Co., 253 Broadway, New York	369.00	New York Boat Oar Co., 69 West St., New York	\$1,047.25	
William R. Thompson, 704 Lafayette Ave., Brooklyn, N. Y.	252.00	Central Metal & Supply Co., 609 E. Lombard St., Baltimore, Md.	393.60	Class 247—New York—3,000 sq. ft. Cork.		
Central Metal & Supply Co., 609 E. Lombard St., New York	313.75	Class 24—500 Brass Condenser Tubes.		Armstrong Cork Co., 105 Fulton St., New York	\$495.00	
CANAL CIRCULAR NO. 387.						
Bids received by the general purchasing officer of the Isthmian Canal Commission for material and supplies, opened Sept. 18, contained the following:						
Class 2—Eleven Pneumatic Hammers.						
Chicago Pneumatic Tool Co., 95 Liberty St., New York	\$500.00	Berry & Aikens, 36th and Wharton Sts., Philadelphia, Pa.	576.80	S. R. Fletcher & Co., 26 Cortlandt St., New York	\$300.00	
Cleveland Pneumatic Tool Co., Cleveland, O.	360.00	G. & W. Mfg. Co., 26 Cortlandt St., New York	349.03	Gutta Percha & Rubber Mfg. Co., 126 Duane St., New York	370.00	
Columbus Pneumatic Tool Co., Columbus, O.	422.00	Montgomery & Co., 105 Fulton St., New York	377.36	A. J. Hemphill, 199 Fulton St., New York	325.00	
Dayton Pneumatic Tool Co., Dayton, O.	470.00	Manhattan Supply Co., 127 Franklin St., New York	385.80	Kenshaw & Mattison, 100 John St., New York	192.00	
Excelsior Equipment Co., Pittsburgh, Pa.	576.50	New Jersey Foundry & Machine Co., 9 Murray St., New York	374.40	Class 387—Norfolk—100 Lbs. Garlock Spiral Packing.		
Independent Pneumatic Tool Co., First Nat. Bank bldg., Chicago	418.00	Vermilye & Power, 17 Battery Place, New York	375.80	Crandall Packing Co., 136 Liberty St., New York	\$125.00	
Ingersoll-Rand Co., 11 Broadway, New York	450.00	H. E. Boucher Mfg. Co., 91 Maiden Lane, New York	428.00	Double Service Packing Co., 430 Walnut St., Philadelphia, Pa.	92.00	
Standard Railway Equipment Co., 90 West St., New York	520.00	F. S. Banks & Co., 73 Warren St., New York	372.80	Garlock Packing Co., 604 Arch St., Philadelphia, Pa.	132.30	
F. T. Witte Hardware Co., 106 Chambers St., New York	625.00	Class 187—New York—Boat Knees.		J. E. W. Ogden Co., 147 Cedar St., New York	150.00	
Class 3—Two Pneumatic Piston Drills.						
Chicago Pneumatic Tool Co., 95 Liberty St., New York	\$120.00	G. Elias & Bro., 965 Elk St., Buffalo, N. Y.	\$490.00			
Cleveland Pneumatic Tool Co., Cleveland, O.	118.50					
Columbus Pneumatic Tool Co., Columbus, O.	180.00					

BIDS FOR PURCHASE OF U. S. S. SARATOGA.

Bids were opened Sept. 25 at the Navy Department for the purchase of the U. S. S. Saratoga, but owing to the fact that the highest bid was but \$2,000, whereas the estimated value is \$4,300, all bids were rejected. The bids were as follows: John H. Gregory, Perth Amboy, N. J., \$2,000; Daniel C. O'Connor, 29 Howard St., Boston Mass., \$1,250.61.

BIDS FOR REPAIRS TO LIGHT TENDER.

Bids received at the office of the Inspector of the Fourth Lighthouse District, Philadelphia, Pa., for making certain alterations to the tender Sunflower, were as follows:

	Item 1. Item 2. Air Venti- Ports. lators.
*Kensington Ship Yard Co., Philadelphia, Pa.	\$128.00 \$495.00
Navy Yard, League Island, Pa.	185.00 313.00
New York Ship Building Co., Camden, N. J.	Both items, \$2,100 *Accepted.

BIDS FOR REMOVING WRECKS.

Bids for removing wreck of Julia A. Decker from Salisbury Beach, Mass., and canal boat F. W. Avery from Great Chazy river, N. Y., received by Maj. Edward Burr, Corps of Engineers, U. S. Army, Boston, Mass., and opened Sept. 19, were as follows:

For Removing Wreck in Newburyport Harbor, Mass.	
Nathaniel E. Gordon, South Portland, Me.	\$ 546.00
Johnston & Virden, Lewes, Del.	629.00
Edwin Canney, Pigeon Cove, Mass.	839.00
John Cashman, Quincy, Mass.	1,000.00
G. M. Van Sant, Atlantic City, N. J.	1,485.00
Beets Bros. & Co., East Boston, Mass.	1,690.00
W. H. Wyman & John A. Johnson, Boston, Mass.	2,250.00
For Removing Wreck in Great Chazy River, John J. Fitzpatrick, Plattsburgh, N. Y.	\$275.00
Bert F. Goodsell, Alburgh, Vt.	439.00
G. M. Van Sant, Atlantic City, N. J.	447.00
Daly & Hannan Dredging Co., Ogdensburg, N. Y.	500.00
John Cashman, Quincy, Mass.	600.00
Nathaniel E. Gordon, South Portland, Me.	783.00

BIDS FOR BREAKWATER AT BAR HARBOR, ME.

Bids received at the U. S. Engineer's office at Portland, Me., for construction of breakwater at Bar Harbor, Me., opened Sept. 10, were as follows:

Per Ton.	
Philip H. Doyen, South Portland, Me.	\$1.27
E. S. Belden & Sons, Hartford, Conn.	1.13
Sylvester L. Hill, Chebeague, Me.	1.23½

IMPROVING ST. MARY'S RIVER.

Abstract of proposals for furnishing about 600,000 ft. B. M. of fir timber, received in response to advertisement dated July 25, 1907, and opened Aug. 26, 1907, by Col. Charles E. L. R. Davis. Appropriation: Improving St. Mary's river, Michigan (general improvement). Amount available, \$908,000. Estimated cost Method A, \$35 per M.; Method B, including freight, \$28.30 per M.

Name and Address Price per M ft. B. M. of Bidder. Method A. Method B.

H. B. Waite Lumber Co., Minneapolis, Minn.	\$28.90	*\$12.40
Somerville Bros., Napa-vine, Wash.	12.40	
Carstens & Earles, Inc., Seattle, Wash.	12.45	
J. G. Newbegin, Tacoma, Wash.	12.90	
The Heron Co., Seattle, Wash.	12.90	
Lumber Manufacturers' Agency, Centralia, Wash.	29.50	13.00
E. H. Lewis Lumber Co., Seattle, Wash.	13.50	
Foster Lumber Co., Tacoma, Wash.	33.85	14.05
Great Western Lumber & Timber Co., Aberdeen, Wash.	14.85	
St. Paul & Tacoma Lumber Co., Tacoma, Wash.	15.06	
G. Elias & Bro., Buffalo,		

N. Y.	38.50	15.50
G. W. Gates & Co., Portland, Ore.	16.00	
Emery D. Weimer, Ludington, Mich.	17.00	
Chas. Este Co., Philadelphia, Pa.	17.50	
Peninsular Bark & Lumber Co., Sault Ste. Marie, Mich.	35.50	17.50
*Accepted.		

DREDGING GREAT SALT POND.

Abstract of proposals for dredging entrance channel to Great Salt Pond, Block Island, R. I., received in response to attached advertisement dated July 29, 1907, and opened Aug. 28, 1907, by Lieut.-Col. J. H. Willard, Corps of Engineers, at Newport, R. I.

No. of Names and Addresses	Rate per cubic yard proposal.	Names of Bidders.	Cents.
1. Maritime Dredging Co., New York City	37½		
2. John A. Seeley, New York City	39½		
3. J. S. Packard Dredging Co., Providence, R. I.	28½		
4. Chas. M. Cole, Fall River, Mass.	32		
*Accepted.			

DIKES IN HUDSON RIVER.

Abstract of proposals for furnishing rubble stone and quarry spalls for constructing and repairing dikes in Hudson river, N. Y., received in response to attached advertisement dated Aug. 15, 1907, and opened Sept. 2, 1907, at New York City, by Col. John G. D. Knight, Corps of Engineers.

Names and Addresses	2,000 cu. yds. rubble quarry	Names and Addresses	2,000 cu. yds. stone spalls
1. Bouker Contracting Co., 21-24 State St., New York City	\$1.54	1. Bouker Contracting Co., 21-24 State St., New York City	\$1.59
2. William D. Fuller, New Baltimore, N. Y.	1.69	2. William D. Fuller, New Baltimore, N. Y.	1.69

EXCAVATION IN CAPE PORPOISE HARBOR.

Abstract of proposals for rock excavation in Cape Porpoise harbor, Me., opened Aug. 30, 1907, by Maj. George A. Zinn.

No. of Bidders.	Price per cu. yd.	Amount.
1. Eastern Dredging Co., Boston, Mass.	\$ 9.60	\$50,169.60
2. Simon J. Donovan, East Boston, Mass.	11.25	58,792.50
3. John J. Fitzpatrick, Plattsburgh, N. Y.	13.62	71,178.12
4. Johnston & Virden, Lewes, Del.	11.65	60,882.90

BREAKWATER NEAR BAR HARBOR.

Abstract of proposals for construction of breakwater near Bar Harbor, Me., opened at Portland, Me., Sept. 10, 1907, by Maj. George A. Zinn, Corps of Engineers. Amount available, \$30,000.

No. of Bidders.	Price per cu. yd.	Estimated ton.	Price per ton.
1. Philip H. Doyen, South Portland, Me.	\$1.27		
2. E. S. Belden & Sons, Hartford, Conn.	1.13	\$1.10	
3. Sylvester L. Hill, Chebeague, Me.	1.23½		
*Accepted.			

JETTY WORK AT GALVESTON.

Abstract of proposals for jetty work at Galveston harbor, Texas, received in response to an advertisement dated Aug. 1, 1907, and opened Aug. 31, 1907, by Capt. John C. Oakes, Corps of Engineers, U. S. Army, at Galveston, Tex.

Name and Address	South Jetty. 84,000 tons	North Jetty. 20,000 tons	Price per ton.
1. David M. Pictor, Galveston, Tex.	\$3.80	\$3.20	\$383,200
2. Chas. Clarke & Co., Galveston, Tex.	3.64	3.09	367,560
3. Christie & Lowe, New Orleans, La.	3.90	3.50	397,600
*Recommended.			

GOOD WORDS FOR THE COURSE FINDER.

Captain R. W. England, of the steamer R. W. England: "Your Course Finder and Deviation Log are good things, and should be on every boat. They are very practical and easily understood."

A. C. McMahon, Kingston, Ont.: "Send me five Course Finders. The book is taking well and those that have seen it speak very highly of it. They all say that it is so practical, something, I should judge, is very seldom the case with the ordinary works on navigation. The Deviation Log Book and Deviation Diagram are meeting with much favor. Those of the marine men who have seen them think very well of them, and all say that they should be on every boat."

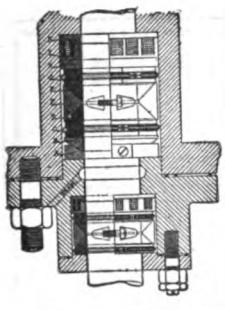
Capt. George J. Bennett, steamer Robert L. Fryer. "Your Course Finder is all right and it is bound to find its way on board of every lake vessel when it becomes better known."

Capt. E. L. Sawyer, of the steamer Masaba: "Your Course Finder, Deviation Log and Deviation Diagram, have been received and I am so far much pleased with them. They are just what we need—something clear and plain and easy to understand. It gives a man lots of confidence in his work to know that he can keep himself located in all kinds of weather. I see no reason why this work should not be in the hands of every master and mate on the lakes."

ORE SHIPMENTS.

Ore shipments for September were 6,217,653 gross tons, notwithstanding the difficulties encountered through heavy weather. The October movement is large and it is probable that 6,000,000 tons will be moved during the present month. This would bring the season's movement up to Nov. 1 to 36,000,000 tons, so that a total movement of 40,000,000 tons may easily be looked forward to. Shippers are busy taking care of contract tonnage and the world business offering is not considerable. Following are the ore figures:

Sept. 1906, of total.	Per cent.	Sept. 1907, of total.	Per cent.	
Escanaba	833,681	17.37	642,251	11.93
Marquette	411,582	7.58	417,684	6.72
Ashland	384,968	7.09	407,572	6.56
Superior	869,678	16.02	1,155,464	18.59
Duluth	1,750,116	32.23	2,203,638	35.44
Two Harbors	1,179,636	21.73	1,291,044	20.76
	5,429,660	100.00	6,217,653	100.00
To Oct. 1, 1906, of total.	1906, of total.	To Oct. 1, 1907, of total.	To Oct. 1, 1907, of total.	
Escanaba	4,270,294	15.17	4,473,417	14.64
Marquette	2,120,519	7.53	2,342,149	7.66
Ashland	2,636,025	9.36	2,722,331	8.91
Superior	4,448,174	15.80	5,571,918	18.23
Duluth	8,334,388	29.61	9,406,283	30.78
Two Harbors	6,341,357	22.53	6,043,108	19.78
	28,150,755	100.00	30,559,206	100.00



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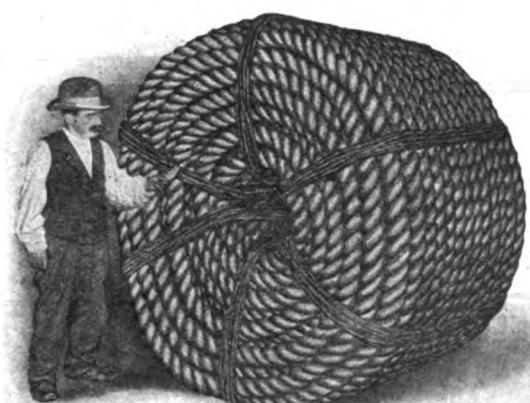
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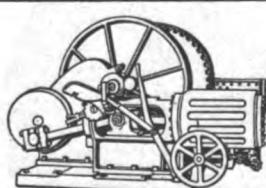
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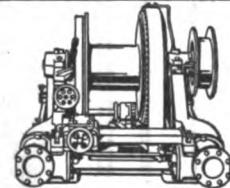
ADVERTISERS

The Star indicates alternate insertions, the Dagger once a month.

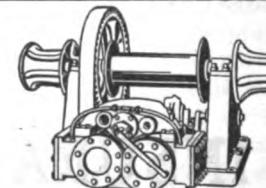
†Akers Steering Gear Co.	—	Donnelly Salvage & Wrecking Co.	43	*Le Mois Scientifique et Industrial 43	43	Roelker, H. B.	50
Almy Water Tube Boiler Co.	37	Douglas, G. L., Jr.	48	Levine & Co.	41	†Rogers Steam Oil Separator Co.	—
American Injector Co.	11	Drein, Thos., & Son.	43	Lockwood Mfg. Co.	50	Root, W. O.	49
American Line	47	Dunbar & Sullivan Dredging Co.	39	Lorain Coal & Dock Co.	49	Ross Valve Co.	50
American Sawdust Co.	38	Elphicke, C. W., & Co.	48	Lundin, A. P.	52	Safety Car Heating & Lighting Co.	—
American Ship Building Co.	4	Emerson Shoe Co.	—	McCarthy, T. R.	48	Scherzer Rolling Lift Bridge Co.	45
American Ship Windlass Co.	2	†Empire Shipbuilding Co.	—	McCurdy, Geo. L.	35	Schrader's A. Son, Inc.	50
Armstrong Cork Co.	52	Falls Hollow Staybolt Co.	41	McKinnon Iron Works.	41	†Scoville Check Valve Co.	—
*Armstrong Mfg. Co.	—	Fix's, S., Sons.	50	MacDonald, Ray G.	48	†Seneca Chain Co.	—
†Ashton Valve Co.	—	Fletcher, W. & A. Co.	41	Mallory Line	47	Shaw, Warren, Cady & Oakes.	48
†Atlantic Works, Inc.	—	Foggs, M. W.	50	†Marine Iron Co.	—	*Shelby Steel Tube Co.	—
Atlantic Works	41	Fore River Ship Building Co.	41	†Marine Iron Works.	—	Sheriffs Mfg. Co.	43
Babcock & Penton	49	Furstenau, M. C.	49	Marshall, Alexander.	48	Shipping World Year Book.	50
Baker, Howard H., & Co.	52	General Electric Co.	52	Martin-Barriss Co.	43	Siggers & Siggers.	38
Belcher, Fred P.	48	Gilchrist, Albert J.	48	Maryland Steel Co.	10	Smith Coal & Dock Co., Stanley B.	3
Boland, J. J.	48	†Goldschmidt Thermit Co.	—	Mehl, Edward.	48	Smooth-On Mfg. Co.	51
*Boston & Lockport Block Co.	—	Goulder, Holding & Masten.	49	Milwaukee Dry Dock Co.	5	†Spence Mfg. Co.	—
†Boucher Mfg. Co., The H. E.	—	Great Lakes Dredge & Dock Co.	39	Mitchell & Co.	48	Spencer, H. R.	48
Bowers, L. M., & Co.	41	Great Lakes Engineering Wks.	12	Morse, A. J., & Son.	47	Standard Varnish Works.	35
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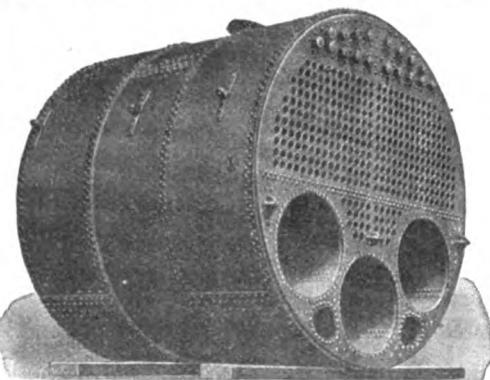
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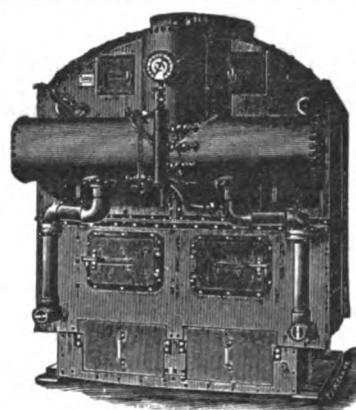
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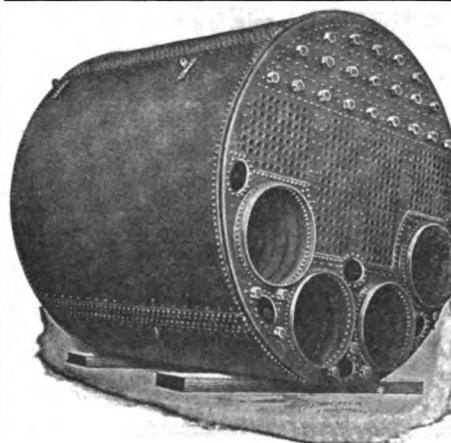
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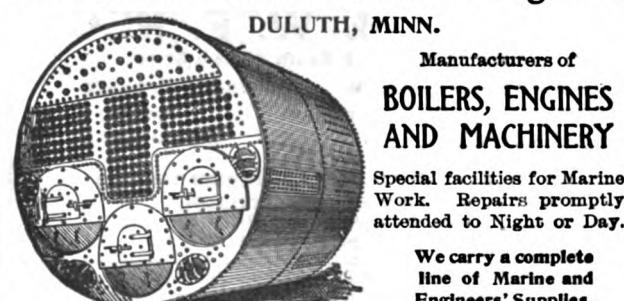


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